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Volume II: Final San Juan National Forest and Proposed Tres Rios Field Office Land and Resource Management Plan

BLM Tres Rios Field Office
San Juan National Forest
Land and Resource Management Plan

Final San Juan National Forest and Proposed Tres Rios Field Office Land and Resource Management Plan

Archuleta, Conejos, Dolores, Hinsdale, La Plata, Mineral, Montezuma, Montrose, Rio Grande, San Juan, San Miguel Counties, Colorado

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Cover Photo: The U.S. Forest Service San Juan National Forest and the Bureau of Land Management Tres Rios Field Office manage about 2.5 million acres of public lands in southwest Colorado. This photograph, taken from the Molas Pass Overlook near Silverton, includes Molas Lake and Kendall Peak, both managed by the Tres Rios Field Office, and high peaks of the San Juan National Forest's portion of the Weminuche wilderness, the largest designated wilderness in Colorado.

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List of Acronyms

ACEC	Area of Critical Environmental Concern
AML	Abandoned Mine Lands
AMP	allotment management plan
ANC	acid neutralizing capacity
APHIS	Animal Plant Health Inspection Services
AQRV	air quality related value
ARSG	Animas River Stakeholders Group
ATV	all-terrain vehicle
AUM	Animal Unit Month
BLM	Bureau of Land Management
BMP	best management practice
CFR	Code of Federal Regulations
CO_2	carbon dioxide
CPW	Colorado Parks and Wildlife
CRA	Colorado Roadless Area
CRMP	Cultural Resource Management Plan
dBA	A-weighted decibel
dbh	diameter at breast height
DMR	Durango Mountain Resort
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FACTS	Forest Service Activity Tracking System
FAMS	Facilities Asset Management System
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act of 1976
FMP	Fire Management Plan
FONSI	Finding of No Significant Impact
FRCC	Fire Regime Condition Class
FSH	Forest Service Handbook
FSM	Forest Service Manual
GIS	geographic information system
GPRA	Government Performance and Results Act
HMA	Herd Management Area
HMAP	Herd Management Area Plan
HRV	Historical Range of Variability
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
IOPs	interagency operating procedures
Infra	Infrastructure database
IRA	inventoried roadless area
KRCRA	Known Recoverable Coal Resource Area

kV	kilovolt
LANDFIRE	Landscape, Fire and Resource Management Planning Tools
LEED	Leadership in Energy and Environmental Design
LRMP	Land and Resource Management Plan
LTSYC	Long-Term Sustained-Yield Capacity
MA	Management Area
MIS	Management Indicator Species
MMBF	millions of board feet
MMCF	million cubic feet
MOU	Memorandum of Understanding
MUSY	Multiple-Use Sustained-Yield Act
MW	megawatt
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act of 1976
NFPORS	National Fire Plan Operations and Reporting System
NFS	National Forest System
NHPA	National Historic Preservation Act
NREL	National Renewable Energy Laboratory
NRHP	National Register of Historic Places
NRM	Natural Resource Manager
NSO	No Surface Occupancy
OHV	off-highway vehicle
ORV	outstandingly remarkable value
PAS	Performance Attainment System
PEIS	Programmatic Environmental Impact Statement
PFYC	Potential Fossil Yield Classification
ppm	parts per million
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
RAMP	Recreation Area Management Plan
RIPS	Rangeland Improvement Project System
RMZ	Recreation Management Zone
RNA	research natural area
ROS	Recreation Opportunity Spectrum
SJNF	San Juan National Forest
SRMA	Special Recreation Management Area
TIM	Timber Information Manager
TMDL	total maximum daily load
TNC	The Nature Conservancy
TRFO	Tres Rios Field Office
TSPQ	Timber Sale Program Quantity
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of the Interior
USFS	U.S. Forest Service

USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WFRP	Wildlife, Fish, and Rare Plants information system
WSA	wilderness study area
WSR	Wild and Scenic River
WSRA	Wild and Scenic River Act
WUI	wildland urban interface

CHAPTER 1 – INTRODUCTION

1.1 Purpose of the Plan

The purpose of this Land and Resource Management Plan (LRMP) is to provide strategic guidance for future management of all National Forest System (NFS) lands managed by the San Juan National Forest (SJNF) and lands within the Tres Rios Field Office (TRFO) administered by the Bureau of Land Management (BLM), except for those lands included in the BLM's Canyons of the Ancients National Monument. This LRMP guides the restoration or maintenance of the health of these lands to promote a sustainable flow of uses, benefits, products, services, and visitor opportunities. It provides a framework for informed decision making, while guiding resource management programs, practices, uses, and projects. It does not include specific project and activity decisions. Those decisions are made later, after more detailed analysis and further public involvement. The LRMP is adaptive in that it can be amended to update the management direction based on new knowledge and information.

This LRMP is strategic in nature and does not attempt to prescribe detailed management direction to cover every possible situation. While all components necessary for resource protection and restoration are included, the LRMP also provides flexibility needed to respond to uncertain or unknown future events and conditions such as fires, floods, climate change, changing economies, and social changes that may be important to consider at the time future decisions are made. Implementation of the LRMP is contingent upon future funding and staffing levels.

The LRMP has been prepared pursuant to the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA), the BLM's planning regulations at 43 Code of Federal Regulations (CFR) 1600, the National Forest Management Act of 1976 (NFMA), and the 1982 U.S. Forest Service (USFS) planning regulations (36 CFR 219) as allowed by the transition provision of the 2000 regulations (36 CFR 219.35, revised 2004; the 2012 forest planning regulations currently in effect allow use of the previous regulations for plan revisions initiated before the 2012 regulations took effect [36 CFR 219.17 (b) (3), 2012]). This LRMP is also accompanied by a Final Environmental Impact Statement (FEIS) as required by the regulations used in its development (43 CFR 1601.0–1601.6 and 36 CFR 219.10).

1.2 Planning Area: Tres Rios Field Office and San Juan National Forest

The SJNF and TRFO lie amidst the mesas and mountains of southwest Colorado at the junction of the Southern Rockies and the Colorado Plateau (Figure 1.1). Elevations within the area range from about 4,900 to 14,000 feet above mean sea level. These lands consist of diverse landscapes, including large expanses of relatively pristine lands and other areas that are more developed, with roads and a wider variety of human activities evident. The planning area provides opportunities for a broad range of human activities and uses, as well as natural processes, to occur.

The SJNF and TRFO are known for beautiful scenery, outstanding prehistoric and historic features, relatively unconfined recreation opportunities of high quality, and clean water and air. A large portion of the water in southwest Colorado originates in mountainous, headwaters areas of these public lands. The people of southwest Colorado have a strong tie to public lands and participate in their management. Many existing relationships and partnerships with a variety of interests and organizations provide tangible evidence of important attachments to these public lands and offer many opportunities for use, enjoyment, and cooperative stewardship.

SJNF and TRFO lands contain some of the nearest high-elevation areas that offer a cooler-temperature refuge for visitors from states to the south and west. The area is ringed by numerous National Parks and Monuments (including Great Sand Dunes, Chaco, Mesa Verde, Grand Canyon, Canyonlands, and Arches National Parks, as well as Hovenweep, Canyons of the Ancients, and Chimney Rock National Monuments). These factors, plus scenic attractions such as the San Juan Skyway and the Alpine Loop scenic byways, make southwest Colorado a national destination for visitors.

The area has a rich heritage, ranging from pre-Puebloan culture to early Hispanic settlements, hard-rock mining, ranching, and contemporary recreation and retirement communities. There are many Native American communities within a few hundred miles that have connections to the area, including 20 Pueblo communities in New Mexico; the Southern Ute and Ute Mountain Ute in Colorado; the Jicarilla Apache, and Navajo tribes in New Mexico; the Hopi Tribes in Arizona; and the Ute Indian Tribe (Uintah and Ouray Reservation) of northeast Utah.

1.3 Land and Resource Management Planning Overview

USFS and BLM land and resource management planning is an adaptive process that includes plan development, monitoring, and adjustment based on desired social, economic, and ecological conditions and the evaluation of impacts to those conditions. The overall purpose of planning is to ensure responsible land management based on current information that guides land stewardship to best meet the needs of the American people.

The USFS and the BLM have similar missions that drive the planning process for each agency:

> **USFS:** to sustain the health, diversity, and productivity of the nation's forests and grasslands in order to meet the needs of present and future generations.
>
> **BLM:** to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

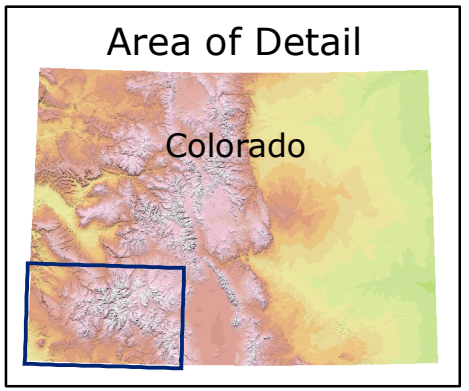
The mission of both agencies is based on the relationship between the American people and their natural resource heritage. This relationship is founded on the principles of sustaining the nation's natural resources for future generations, producing personal and community well-being, and providing economic wealth for the people, communities, and businesses of the nation. Both agencies have strategic plans (as required by the Government Performance and Results Act of 1993 [GPRA], 5 United States Code [USC] 306, 31 USC 1115–1119, and 31 USC 970–-9704) aimed at increasing the accountability of federal agencies by measuring their progress toward achieving agency goals and objectives. The strategic plans were used during the development of this LRMP as guidance for developing desired conditions and outcomes.

While there are differences between the planning processes used by each agency, the fundamentals of land and resource planning are shared by both the BLM and the USFS. The two agencies also share similar missions, partners, issues, and constituents. To enhance customer service and provide better stewardship of the land, the SJNF and the TRFO work closely together under a concept known as "Service First." This joint planning effort is a demonstration of the commitment of both offices to build on this Service First partnership and provide coordinated land management across the public lands of southwest Colorado.

1.3.1 Bureau of Land Management and U.S. Forest Service Planning

This LRMP is based on the results of two comprehensive and complementary planning efforts, one being resource data driven and the other being public value driven. The first effort provided technical analyses of conditions and trends for social, economic, and ecological elements related to the SJNF and TRFO. These analyses included consideration of new relevant information and legal and policy changes that have occurred since the current plans were developed.

San Juan National Forest and Tres Rios Field Office Figure 1.1



Legend

- San Juan National Forest
- Tres Rios Field Office
- Chimney Rock National Monument
- State & Federal Highways
- Bureau of Land Management
- National Forest

DOVE CREEK
SILVERTON
RICO
Canyons of the Ancients National Monument
DOLORES
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N

The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
April 24, 2013

0 10 20 40 Miles

The second major effort is to gather and use knowledge of the public regarding their values, knowledge, and uses of SJNF and TRFO lands. The initial public participation effort focused on input related to vision, management challenges, land allocations, desired conditions, objectives, and suitable uses of the planning area. Results from the technical analyses were used in the public participation process to inform, focus, and enhance participant dialogue. Additional information from the public was also gathered during the comment periods that accompanied the release of the Draft Environmental Impact Statement (EIS) (2007) and the Supplement to the EIS (2011). The assessments and knowledge gained through public involvement were used to develop and shape the LRMP as described in this volume, as well as the other alternatives that are documented in the FEIS (Volume I). These documents do not address every potential topic that may arise in management of the SJNF and TRFO. Rather, they address the issues that the Responsible Officials (USFS Regional Forester and BLM State Director) have determined to be pertinent to this planning process. A summary of public participation activities is given in Volume III, Appendix S.

Planning generally occurs at three levels within both agencies. At the national level of the USFS, the Chief is responsible for the USFS Strategic Plan, as required by the GPRA. The Strategic Plan establishes goals, objectives, performance measures, and strategies for management of the NFS. The SJNF is one administrative unit of this system. Land management plans are developed at the forest level and are approved by the Regional Forester. The third level is for site-specific projects and activities, which are actions that typically fall under the authority of the Forest Supervisor or District Ranger.

At the national level for the BLM, the Director is responsible for the Annual Operating Plan, which falls under the U.S. Department of the Interior's (USDI's) Strategic Plan as required by the GPRA. The Strategic Plan and the Operating Plan establish goals, objectives, performance measures, and strategies for management of BLM's National System of Public Lands. The TRFO is an administrative unit of this system. Resource management plans are typically developed at the field office level and are approved by the State Director. The third level is for site-specific projects and activities, which are actions usually under the authority of the Field Manager.

BLM and USFS management is authorized and guided by many laws, regulations, and policies. In addition, both agencies have a directives system that consists of manuals and handbooks. These contain the agencies' policies and procedures, and serve as the primary basis for the internal management, control of programs, and administrative direction. Unless needed to provide context, clarity, or emphasis, direction from these sources will not be reiterated in this LRMP. Within the flexible and adaptive framework of both agencies' planning regulations and directives, the guidance set forth by this LRMP should continue to provide a meaningful framework and vision for management into the foreseeable future.

1.3.2 Relationship of the LRMP to Other Planning Documents

This LRMP will replace the current San Juan National Forest Land and Resource Management Plan, approved in 1983 and amended 22 times, including a significant, comprehensive amendment in 1992 (USFS 1992a). It will also replace the portions of the current San Juan/San Miguel Resource Management Plan, approved in 1985 and amended seven times, that are currently within the jurisdiction of the TRFO (previously known as the San Juan Resource Area), with the exception of the lands within the Canyons of the Ancients National Monument, which are managed under a plan approved in 2010. The BLM's Uncompahgre Field Office is in the initial stages of revising the plan for other lands covered by the 1985 San Juan/San Miguel Resource Management Plan.

This LRMP is one key document in a set of documents that integrates and displays information relevant to management of SJNF and TRFO lands. Other documents that will form the administrative record for the LRMP include the FEIS; appendices; the Record of Decision (ROD); social, economic, and ecological assessments; the Analysis of the Management Situation report; public participation documentation; objections and disposition record; administrative corrections; and other relevant material. Together these documents provide the background of information, comprehensive analyses, and public involvement that are being used to inform the final decisions for this LRMP.

A separate decision that has been incorporated into this document, apart from the LRMP, is determining the NFS lands that will be administratively available for mineral leasing and the associated stipulations for

leasing. A similar decision for BLM lands is made as part of the resource management plan decision. The USFS considers leasing availability decisions to be separate from planning decisions, but closely linked with both planning- and project-level components; therefore, the USFS leasing availability decision has been incorporated into this planning effort.

While this LRMP will be the primary guide to management of the SJNF and TRFO lands, there are several federal, state, tribal, and local planning documents that influence management of nearby lands in southwest Colorado, which have been considered throughout this planning process and reviewed for consistency with this LRMP. An analysis of these plans is provided in Volume III, Appendix W.

1.3.3 LRMP Consistency

All projects and activities authorized by the BLM and the USFS must be consistent with LRMP (16 USC 1604(i), 43 CFR 1601.5-3). A project or activity will be considered consistent with this LRMP if it is consistent with the desired conditions, objectives, standards, guidelines, suitability determinations, allowable uses, and other management actions and decisions approved in the LRMP.

If a project or activity as proposed would not be consistent with the LRMP, the Responsible Official has the following options:

- modify the proposal so that the project or activity will be consistent;
- reject the proposal; or
- amend the LRMP contemporaneously with the approval of the project or activity so that the project or activity is consistent with the LRMP, as amended. The amendment may be limited to apply only to the project or activity or may apply more broadly.

This LRMP does not grant, withhold, or modify any contract, permit, or other legal instrument, and does not authorize projects or activities, except where specifically noted. Decisions to approve or authorize specific projects are considered separately from the LRMP during the appropriate time to make such decisions. National Environmental Policy Act (NEPA) compliance is required for any project-level decision that may have an impact on the environment. Project-level decisions must be informed by site-specific analysis through an open, public process. This allows the latest science and public input to be employed at the time decision is to be made.

1.4 LRMP Organization, Content, and Terminology

The management direction and guidance presented in Chapter 2 is organized by resource and resource use, and applies across the entire SJNF and TRFO landscapes, except where specifically noted. Additional plan direction that applies only to specific areas within the SJNF and TRFO is presented in Chapter 3. All of this direction is divided into three interrelated components: 1) *desired conditions*, which, when taken as a whole, make up the vision for management of the planning area; 2) *objectives, suitability, and allowable uses*, which comprise the plan strategy that will be used to achieve the vision; and 3) *standards and guidelines*, which are the criteria and controls used to execute the strategy. This management direction and guidance should be followed in future implementation of projects and activities, and is also referred to as the *plan components,* or *LRMP components*. The purpose of each of these plan components is described in greater detail below. The number of plan components under each resource or area varies due to the varying complexity of the resource, the extent of existing management direction already provided by law and policy, the need for action, and SJNF and TRFO priorities. Some resources or areas may not include all types of plan components.

Finally, a monitoring plan has been developed to evaluate progress toward achieving desired conditions and objectives, and to determine how well management requirements, such as standards and guidelines, are being applied. Programmatic direction for monitoring and evaluation is included to provide a framework for subsequent monitoring.

All direction in this LRMP applies to both SJNF and TRFO lands, unless otherwise noted. The LRMP makes no decisions applicable to other ownerships or jurisdictions.

Because this LRMP applies to two different agencies, its format and some of its terminology vary from conventional land and resource management plans for either agency. This LRMP attempts to incorporate the format of both agencies and use the same terminology to the extent possible, but some exceptions exist where needed to match legal or policy direction that differs by agency. Table 1.4.1 shows the terminology used in this document as compared to that which each agency typically uses to identify various types of plan decisions. Definitions for the terminology used in the LRMP tie to each agency's planning guidance as described in Section 1.4.1.

Table 1.4.1: Land and Resource Management Plan Components and U.S. Forest Service and Bureau of Land Management Decision Types

LRMP Component Terminology	Conventional USFS Plan Decision Terminology	Conventional BLM Plan Decision Terminology
Desired Conditions	Desired Conditions	Goals
Objectives	Objectives	Objectives
Suitability and Allowable Uses	Suitable Uses	Allowable Uses
Standards	Standards	Management Actions
Guidelines	Guidelines	Guidelines

1.4.1 LRMP Components

Desired Conditions

USFS: Desired conditions encompass the overarching goals of land and resource management. They are statements of the social, economic, and ecological attributes and values toward which management strives to achieve and characterize or exemplify the desired outcomes of land management. They describe how the area is expected to look and function in the future. Some desired conditions are general, while others are quite specific.

Desired conditions are aspirations; they may only be achievable over the long term. Collectively, specific projects implemented subsequent to this LRMP should contribute to maintaining and/or achieving desired conditions, but no single project should be expected to contribute to meeting all desired conditions. Identifying and establishing desired conditions is the central focus of this LRMP.

BLM: Desired conditions are broad-scale direction that guides future land management actions and subsequent site-specific implementation decisions. Desired conditions in this LRMP are referred to as "goals" in conventional BLM resource management plans.

Objectives

USFS: Objectives are concise projections of measurable, time-specific intended outcomes. Objectives are a means of progressing toward maintaining and/or achieving desired conditions. As with desired conditions, they are aspirations, not commitments or final project decisions. Implementation and achievement would rely upon sufficient funding and staffing levels.

BLM: Objectives identify specific desired outcomes for resources. Objectives are usually quantifiable and measurable and may have established timeframes for achievement (as appropriate). As with desired conditions, they are aspirations, not commitments or final project decisions. Implementation and achievement would rely upon sufficient funding and staffing levels.

Suitability and Allowable Uses

USFS: Suitability is defined by the capability of an area to accommodate specific uses and activities in a sustainable manner based on the area's inherent biophysical characteristics, public input, and balancing desired conditions for multiple resources. Suitability determinations are general determinations derived from modeling exercises at the landscape level that can be refined as necessary at the project level. Suitability determinations in this LRMP are made for the timber, grazing, and travel programs. The allowable use tables in Chapter 3 portray suitability of these uses for specific areas and also identify other activities that are allowed, restricted, or prohibited within each area.

BLM: Allowable uses refer to those allocations that identify surface lands and/or subsurface mineral interests where uses are allowed, restricted, or prohibited to meet desired conditions or objectives.

Standards

USFS: A standard is an approach or condition that is determined to be necessary to meet desired future conditions and objectives, and/or to ensure the long-term viability of resources. A standard (worded as "must" or "shall") describes a course of action that must be followed or a level of attainment that must be reached. Deviations from standards would require analysis and documentation through a subsequent land management plan amendment.

BLM: Standards are actions anticipated to achieve desired outcomes, including actions to maintain, restore, or improve land health. Actions include proactive measures, as well as measures or criteria that will be applied to guide day-to-day activities occurring on public land. Standards in this LRMP are referred to as "management actions" in conventional BLM resource management plans.

Guidelines

USFS: A guideline (worded as "should") is presumptively a requirement to meet desired future conditions and objectives, and/or to ensure the long-term viability of resources. Guidelines are put forward in this LRMP in recognition that there may be circumstances that could generate or require alternative, more appropriate means for meeting desired future conditions and objectives, and/or to ensure the long-term viability of resources. It is also recognized that there may be limited individual circumstances where the need for a guideline no longer exists or the applicability of a guideline is otherwise altered (e.g., changes in surrounding land use that may render a guideline ineffective). In these situations a guideline has been determined to be more appropriate than a standard by allowing some flexibility in approach as conditions change and new information is obtained. The use of guidelines in this LRMP is an acknowledgement that a single ideal approach for meeting our desired future conditions and objectives, and/or ensuring the long-term viability of resources may yet to be identified, and that there may be nuances in any given management situation that warrant a modified approach. If the Responsible Official for a project decision finds that deviation from a guideline is necessary, he or she must record the reasons for deviation as part of the project decision and explain how the intent of the guideline—as established by the desired future conditions and objectives, and/or need to ensure long-term viability of resources—is being met through alternative means. If the intent of the guideline is met through alternative means, a land management plan amendment typically would not be required.

BLM: A guideline refers to a practice, method, or technique determined to be appropriate to meet or move towards a desired condition. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective.

Additional Guidance

The development and implementation of projects on BLM and NFS land is also guided by other sources, including applicable federal laws and regulations, executive orders, directives (manuals and handbooks), state and local laws and regulations, and best management practices (BMPs). This LRMP includes references to other applicable guidance where appropriate, but guidance from laws, regulations, policies, and agency directives is generally not detailed unless necessary to emphasize or highlight information.

1.4.2 Administrative Actions

Administrative actions are the day-to-day activities required to serve the public and to provide optimum management of SJNF and TRFO resources. These actions are allowable by regulation and do not require authorization within this LRMP and generally do not require site-specific analysis under NEPA. For example, in day-to-day management of the TRFO, the BLM is responsible for law enforcement activities that need not be authorized under the LRMP. Additionally, the SJNF may authorize or restrict access in certain areas in emergency situations (such as wildfire) or coordinate with other agencies and organizations, such as Colorado Parks and Wildlife (CPW), for specific activities that may not require site-specific NEPA documentation efforts. Other examples of administrative actions include, but are not limited to, mapping, surveying, inventory, monitoring, and research studies. These and other administrative actions will be conducted in the within the SJNF and TRFO, sometimes in partnership with other landowners, agencies, or entities. The degree to which these actions are carried out depends on agency policies, available personnel, funding levels, and further environmental analysis and decision-making, as appropriate.

1.5 Opportunities and Challenges in the San Juan National Forest and Tres Rios Field Office

1.5.1 Distinctive Nature of the Planning Area

The SJNF and TRFO have distinct characteristics that set them apart from other places. Some key characteristics are described below.

Diverse Geography

The SJNF and TRFO, which lie within the Colorado Plateau and Southern Rocky Mountains ecoregions, display tremendous geographic diversity. They range from about 4,900 feet in the canyon country (near the Utah border) to over 14,000 feet in the high peaks of the San Juan Mountains. The tremendous geologic, topographic, climatic, and vegetative diversity associated with these lands supports an unusually broad variety of biodiversity, as well as a wide range of habitats for flora and fauna. The variety of ecosystems found throughout the planning area, including semi-desert grasslands, pinyon-juniper woodlands, ponderosa pine forests, spruce-fir forests, alpine tundra, riparian areas, and wetlands, offer exceptional diversity in scenery and recreational opportunities.

Scenery and Tourism

The diverse geography of the planning area provides for remarkable scenery and attracts many visitors. The proximity to numerous national parks and national monuments in the Four Corners (including Mesa Verde, Grand Canyon, Canyonlands, and Arches National Parks, as well as Hovenweep, Canyons of the Ancients, and Chimney Rock National Monuments), as well as scenic attractions (including the San Juan Skyway, the Alpine Loop Scenic Byway, and the Durango-Silverton Narrow Gauge Railroad), make southwest Colorado a national destination for visitors.

Recreation

The size and the diversity of the planning area make a vast array of recreational opportunities activities possible, including scenic driving, all-terrain vehicle (ATV) use, mountain biking, hiking, horseback riding, camping, fishing, hunting, boating, and guided trips. Past mining, logging, and grazing activities have created an impressive transportation network that provides people access to public lands to engage in the recreational experiences they seek.

Undeveloped Lands

Within the planning area, there are large undeveloped lands where natural ecological processes proceed with minimal human interference. These lands provide habitat for wide-ranging species, as well as linkages that facilitate species movements and gene flow. They act as reserves that protect the ecosystems and the full range of biological diversity within them. The planning area includes over 420,000 acres designated as

wilderness, including the Weminuche, the largest wilderness area in Colorado. There are an additional 566,100 acres of Colorado Roadless Areas (CRAs) within the SJNF and over 120,000 acres of BLM lands with wilderness characteristics, including wilderness study areas (WSAs).

Heritage Resources

The lands within the planning area have a long and rich prehistoric and historic record that goes back approximately 10,000 years. Within the area, many important discoveries and a great depth of archeological research has taken place. The archeological record of the area contains evidence of the earliest agricultural societies in the region. The historic record includes artifacts of Spanish and Euro-American explorers, trappers, miners, and settlers. This long record of human occupation has left one of the highest densities of prehistoric and historic cultural resources found anywhere in the United States.

Energy Minerals

The lands within the planning area contribute significantly to the nation's ability to produce natural gas. At least 90 billion cubic feet (which is enough energy to heat a million homes) are produced annually. The utilization of the rich mineral resources of the planning area need not only be done in such a way that it means getting the most amount of resource as is practicable for the minimal amount of disturbance, and that the taxpayer, federal, state, and local governments, get the maximum royalty (as applicable) for minerals produced on public lands. This means making sure that BMPs are used to prevent waste and verify production. It also means making sure that utilization of one mineral resource is not done in such a way that it might preclude or diminish the ability to be utilized in the future.

American Indian Rights and Interest

The SJNF and TRFO work collaboratively with the 26 Native American tribes and pueblos that claim cultural affiliation with lands under each agency's jurisdiction to ensure that management issues of concern to the tribes and pueblos are addressed. Below is a list of tribes and pueblos that claim cultural affiliation with SJNF and TRFO lands. All applicable USFS and BLM policy addressing tribal treaty rights and federal trust responsibilities will continue to be followed. The SJNF and TRFO recognize the unique sovereign nation status that the Native American tribes and pueblos have with the United States government.

Tribes and Pueblos that Claim Cultural Affiliation with SJNF and TRFO Lands

- Jicarilla Apache Nation
- Kewa Pueblo (formerly Pueblo of Santo Domingo)
- Navajo Nation
- Ohkay Owingeh (formerly Pueblo of San Juan)
- Pueblo of Acoma
- Pueblo of Cochiti
- Pueblo of Isleta
- Pueblo of Jemez
- Pueblo of Laguna
- Pueblo of Nambe
- Pueblo of Picuris
- Pueblo of Pojoaque
- Pueblo of San Felipe
- Pueblo of San Ildefonso
- Pueblo of Sandia
- Pueblo of Santa Ana
- Pueblo of Santa Clara
- Pueblo of Taos
- Pueblo of Tesuque
- Pueblo of Zia
- Southern Ute Indian Tribe
- The Hopi Tribe
- Uintah and Ouray Ute Indian Tribe
- Ute Mountain Ute Tribe
- Ysleta del Sur Pueblo
- Zuni Tribe

The Ute Mountain Ute and the Southern Ute tribes are both major contributors to the area economy and are among the largest employers in Montezuma and La Plata Counties, respectively. Both tribes have diversified

economies including gaming, oil and gas development, and natural resource development on tribal lands. The Southern Ute Tribe also plays a major role in land and housing development in La Plata County.

The Brunot Agreement

The Brunot Agreement, ratified by Congress in 1874, withdrew over 5,000 square miles in the mountains of southwest Colorado from the 1868 Ute Reservation. The agreement, entered into between the United States (as represented by Felix Brunot) and the Ute Indians in Colorado, was passed into law (18 Stat., 36) by the House of Representatives and the Senate of the U.S. Congress on April 29, 1974 (after Congress decided in 1871 that the United States would no longer make treaties with Native American tribes, yet continued to interact with Native American tribes in much the same manner through executive orders and agreements enacted as statutes). Under the "reserved rights doctrine," hunting rights on reservation lands relinquished by the Utes were retained; that is, the tribes retained such rights as part of their status as prior and continuing sovereigns. Article II of the Bruno Agreement specified that "the United States shall permit the Ute Indians to hunt upon said lands so long as the game lasts and the Indians are at peace with the white people." The Ute Mountain Ute Tribe's hunting rights were acknowledged when the tribe sued the State of Colorado for their historical hunting rights in 1978. The rights were granted to the tribe under a consent decree that gave enrolled members of the Ute Mountain Ute Tribe the right to hunt deer and elk in the Brunot area for subsistence, religious, or ceremonial purposes. The consent decree specified that tribal members may hunt deer and elk without a state license year-round, providing that they obtain a tribal hunting permit. In 2013, the Ute Mountain Ute Tribe re-negotiated this agreement with the State of Colorado to include the Tribe's fishing rights and the right to hunt a certain number of black bears, moose, mountain goats, big horn sheep and mountain lions, in addition to the existing take of elk and mule deer within the Brunot area. Other game animals may be hunted without a license and without bag limits, but only during hunting seasons established by CPW. In 2008, the Southern Ute Indian Tribe signed an agreement with the State of Colorado which reinstated their hunting and fishing rights within the Brunot area. The SJNF and TRFO will continue to ensure that the hunting and fishing rights of the 1873 Brunot Agreement are upheld on public lands under their management jurisdictions. In exercising their Brunot hunting rights, the Ute Mountain Ute and Southern Ute tribal members are required to adhere to federal policy and regulations designed to protect natural and cultural resources.

The SJNF and TRFO will continue to allow tribal members to collect botanical and other special forest products from public lands within the constraint of ecological sustainability. The SJNF and TRFO will also coordinate and collaborate with tribal governments to increase awareness and knowledge of culturally significant plants, and will consider potential impacts on culturally significant plants in project design and implementation. Prescribed burn plans, noxious weed control, and other management projects should address and consider traditional uses and traditional management of culturally significant plants.

Important cultural areas and traditional cultural properties will be protected for current and future tribal use. The SJNF and TRFO will continue to consult with tribes and pueblos, and knowledgeable individuals to identify important cultural areas and traditional cultural properties. If requested by the tribes, the SJNF and TRFO will keep information on such localities and uses confidential.

The SJNF and TRFO will maintain and strengthen the existing relationship of government-to-government consultation between the USFS and BLM and these 26 Native American tribes and pueblos. The SJNF and TRFO will develop consultation protocols and other formal agreements between the USFS and BLM and Native American Indian Tribes with direct communication between USFS and BLM line officers and tribal officials. The SJNF and TRFO will provide opportunities for tribal participation and partnerships in educational, interpretive, social, and economic programs and will continue to work with the tribes and pueblos to educate the public on appropriate and respectful etiquette when visiting culturally sensitive sites.

1.5.2 Management Challenges

There are several unique management challenges on public lands in southwest Colorado related to the distinct characteristics of the area described above. These challenges, summarized below, were considered by the agencies and the public in developing plan guidance and frame much of what is presented in this LRMP.

Meeting Recreation Demand

The local population surrounding the SJNF and TRFO is projected to increase by approximately 66,500 residents by 2040 (see Section 3.30 of the FEIS for demographic projections). Demand for recreational opportunities is expected to increase, along with the increase in the population. Anticipating demand for changing recreational opportunities—such as greater interest in downhill-specific mountain bike routes or geo-caching—is important as well. Meeting this increasing demand without compromising the integrity of ecosystems requires careful planning and management.

Balancing Multiple Uses

Land management conflicts are common within the planning area, especially as people engaging in different uses increasingly compete for the same piece of land. SJNF and TRFO lands that are adjacent to private lands (referred to as the wildland-urban interface, or WUI) can also create a number of management challenges, including fire management, fuels reduction, recreation conflicts, and wildlife habitat preservation/protection as well as energy and mineral exploration and development. Complex land ownership patterns also create management challenges, including issues and conflicts in relation to boundaries, easements, public access, and roads.

Managing Water-related Issues

Water-related issues will continue to present complex and significant challenges throughout the planning area. Public land managers will continue to be called upon to maintain clean water, protect water-dependent ecosystems, protect rare or threatened and endangered aquatic species, and perform watershed restoration while, at the same time, continuing to supply water for a variety of existing and future consumptive needs and multiple uses.

The population surge in the West continues to increase the diversion and the consumptive use of water and, at the same time, increases the demand for water-based recreation. Changes in the status quo of water appropriation and the complexity of federal water management policy are a deep concern of state governments and senior water rights holders. The ongoing regional drought has accelerated state initiatives designed to develop new water storage and diversion projects of various sizes. Regional climate shifts and global climate change could further exacerbate the complexity of these issues.

Climate Change

Because we do not understand every complex interaction between a warming climate and the ecosystems of SJNF and TRFO lands, the vision and strategies for climate change in this LRMP focus primarily on maintaining the health, diversity, and productivity of SJNF and TRFO lands and focusing on ecosystems that have already demonstrated sensitivity or are considered most at risk. In the short term, both the USFS and BLM plan to continue improving their understanding of ecosystem changes. The agencies also intend to pursue long-term monitoring projects. There are many flora and fauna populations that are vulnerable because of their narrow range of habitat, small populations, or limited ability to adapt or tolerate change. Specific strategies have been developed for these vulnerable species, as well as for important ecosystems that are already undergoing rapid change.

The SJNF's and TRFO's response to ecosystem change as a result of climate change includes a variety of adaptation and mitigation strategies. The primary strategy will be to manage for healthy, resilient ecosystems. It is also recognized that ecosystems have always been dynamic. Early detection of ecosystem changes that result from climate change will require detailed, regularly scheduled monitoring.

Desired conditions and objectives for climate change are interrelated with managing for healthy ecosystems. LRMP components related to climate change are dispersed throughout the resource sections of the LRMP and are all identified in Volume III, Appendix G.

Administrative and permitted activities on the SJNF and TRFO will emit the lowest practicable greenhouse gas emissions and have the smallest ecological footprint possible to promote sustainable natural resource management. In addition, the SJNF and TRFO will continue to explore and increase the use of renewable energy to power administrative facilities.

CHAPTER 2 – RESOURCE DIRECTION

2.1 Ecological Framework and the Conservation of Species

The following strategies, concepts, and components are used in this LRMP to establish an ecological framework for the conservation and management of ecosystems, habitats, and species. These are overarching strategies that have relevance to a wide range of program areas and agency actions occurring on TRFO and SJNF lands. They are especially important to the four program areas of terrestrial ecosystems and plant species, terrestrial wildlife, riparian and wetland ecosystems, and aquatic ecosystems (Sections 2.2–2.5).

2.1.1 Sustainable Ecosystem Strategy

Ecosystems are communities of living organisms interacting with each other and with their physical environment (Kaufmann et al. 1994). They are dynamic systems that change in response to succession, climate, and the effects of disturbances, including those caused by fire, insects, disease, drought, wind, and humans. Humans are an integral part of ecosystems and depend on them for their short- and long-term well-being. In order to meet the social and economic needs of future generations, ecosystems are to be managed for sustainability. To ensure the long-term sustainability of ecosystems, humans must manage within the physical and biological capabilities of the land, maintain all of the ecological components and processes, and not irreversibly alter ecosystem integrity and resilience. The concept of sustainability is a fundamental component of the LRMP and is guided by the Multiple-Use Sustained-Yield Act (MUSY) and the FLPMA. The MUSY directs that federal lands are managed in a manner that provide a framework of social, economic, and ecological conditions that sustain native ecosystems, support a diversity of native plant and animal species, and provide a continuous flow of goods and services to the nation. The FLPMA directs that public lands be managed based on multiple use and sustained yield, as well as the protection of other values including, but not limited to, scenic, historical, ecological, environmental, air and atmospheric, and water resource values.

The MUSY identifies three interrelated and interdependent elements of sustainability for the USFS: social, economic, and ecological. Social and economic sustainability is associated with the provision of goods and services from the TRFO and SJNF to people and communities over the long term. Sustainability takes into account the social and economic conditions of the planning area, including recreational opportunities, multiple uses that contribute to local and regional economies, and cultural resources. Ecological sustainability is intended to provide the ecological conditions that maintain or restore the diversity of native ecosystems and natural disturbance processes. This in turn will maintain suitable habitats for a wide range of plant and animal species and provide for the diversity and viability of plant and animal species, populations, and communities. When applied effectively, the sustainable ecosystems strategy will result in ecological conditions similar to those under which native species evolved. Achieving these conditions offers some assurance against further losses of biodiversity (Seymore and Hunter 1999). Managing for ecological sustainability is intended to ensure that ecosystems of the TRFO and SJNF continue to maintain the ecological conditions necessary to provide goods and services needed by people and communities, now and in the future. This strategy is also consistent with the management of public lands as prescribed under the FLPMA.

The sustainable ecosystems strategy of the TRFO and SJNF includes 1) protected area designation and preservation (a coarse-filter approach), 2) ecosystem management using sustainable ecosystem concepts, 3) the development and application of plan components (desired conditions, objectives, standards, and guidelines) that provide a framework for the management and preservation of ecosystems, and 4) monitoring the effects of management activities on the TRFO and SJNF and the application of adaptive management principles. Effective monitoring and evaluation of how management activities are affecting ecosystems and species, and the correct application of adaptive management principles, will be critical to maintaining functional, sustainable ecosystems and addressing the needs of dependent species. Refer to Chapter 4 for a description of the SJNF and TRFO monitoring components.

2.1.2 Disturbances and the Historical Range of Variability

Major disturbances, including those caused by fire, insects, disease, drought, wind, floods, and humans, can have a profound effect toward shaping the composition, structure, and function of ecosystems at multiple scales and in creating a heterogeneous pattern of vegetation communities and habitats across the planning area. Disturbances vary in magnitude, size, and frequency, some of which humans have little control over. Multiple disturbances can interact in complex ways and often act in concert, which can predispose ecosystems to more intense effects. Many of these disturbances have significant long-term effects on terrestrial, riparian area and wetland, and aquatic ecosystems. It is not a question of whether disturbances will happen, but when, where, and at what scale they will happen. Disturbances can have a major influence (adverse or beneficial) on the agencies' ability to achieve the desired conditions and objectives of the LRMP.

The Historical Range of Variability (HRV) of ecosystems is determined by major disturbances and also less dramatic changes occurring over a long period of time. HRV is an important concept used in the LRMP to guide the management of ecosystems and to achieve ecosystem sustainability. HRV provides a tool used to gain a better understanding of complex ecological systems. It can be used to establish an ecological baseline, allowing managers to identify trends, assess the need for ecological restoration, and evaluate the consequences of management activities (Kaufmann et al. 1994; Kulakowski and Veblen 2006; Landres et al. 1999; Moore et al. 1999; Swetnam et al. 1999; Veblen and Donnegan 2005). HRV describes a dynamic set of boundaries within which most native biota have persisted through time and across space (Landres et al. 1999; Swetnam et al. 1999).

Using a reference period of indigenous settlement that occurred from the 1500s to the late 1800s, HRV first describes the range of ecological conditions that occurred on TRFO and SJNF lands under more "natural" disturbance regimes. Conditions occurring during this period represent those that existed prior to European-American settlement, which introduced sweeping ecological changes due to activities such as large-scale timber harvest, livestock grazing, fire suppression, dams, consumptive water uses, and roads.

The HRV is then used to evaluate the current ecological conditions of ecosystems on TRFO and SJNF lands by comparing them to the ecological conditions that occurred during the reference period. The HRV concept assumes that as ecological conditions depart from the range of historic conditions (primarily due to human actions), the risk of species loss increases (Duffy et al. 1999). Since native species evolved under HRV conditions, maintaining a full range of similar conditions will offer some assurance against the loss of biodiversity (Seymore and Hunter 1999). As reflected in the desired conditions, objectives, and standards and guidelines that follow, the intent is to use HRV to better describe and understand ecosystems within TRFO and SJNF lands and to help develop attainable LRMP components that are intended to protect and sustain ecosystems and species, while meeting a variety of public needs where possible. The intent is not to mandate that HRV conditions be achieved in all cases.

2.1.3 Protected Areas

Protected areas are key components of the sustainable ecosystems strategy. Protected areas are lands especially dedicated to the protection and maintenance of biological diversity (International Union for Conservation of Nature 1994).They are large, mostly unaltered, undeveloped, and roadless lands that contain terrestrial, riparian area and wetland, and aquatic ecosystems at multiple scales. They serve as conservation reserves and refuges to protect the native biodiversity within them (Norton 1999; Noss 1991). They also provide wildlife movement corridors and landscape linkage areas that connect habitats and landscapes, which in turn facilitate the interaction of species.

Management objectives for protected areas on TRFO and SJNF lands include:

- Preserving habitats, ecosystems, and species in as undisturbed a state as possible;
- Conserving the area's biodiversity through protection, not through active management;
- Ensuring the integrity of its ecosystems; and
- Maintaining established ecological processes.

Establishing and preserving protected areas is a means to maintain ecosystem diversity, which presumably will protect the diversity and viability of native plant and animal species and communities, and the ecological processes occurring within those ecosystems. The maximum level of biodiversity will be preserved if the maximum diversity of habitats is represented in protected area networks (Noss and Peters 1995; Scott et al. 1993). The establishment and preservation of protected areas is analogous to the Nature Conservancy's (TNC) coarse-filter conservation approach, which is well-documented in the literature and has broad support in the scientific community (Hunter et al. 1988; Noss 1987; TNC 1982). Protected areas, which make up about 48% of public lands within the planning area, include wilderness areas, the Piedra Area, WSAs, research natural areas (RNAs), and CRAs (see Figure 2.1.1).

Unaltered, unroaded, high-elevation terrestrial, riparian, and wetland ecosystems are very well represented in protected areas on both SJNF and TRFO lands. These include alpine areas, spruce-fir forests, aspen forests, Thurber fescue mountain grasslands, riparian forests and shrublands, fens, and herbaceous riparian areas and wetlands. Unaltered, unroaded, mid-elevation ecosystems are also well represented in SJNF and TRFO protected areas. These include cool-moist mixed conifer forests, warm-dry mixed conifer forests, ponderosa pine forests, pinyon-juniper woodlands, mountain shrublands, Arizona fescue mountain grasslands, deciduous riparian forests and shrublands, and herbaceous riparian areas and wetlands. Unaltered, unroaded, low-elevation ecosystems are less common and not as well represented in protected areas in the planning area. These include sagebrush shrublands, semi-desert shrublands and grasslands, deciduous riparian forests, and hanging gardens. For aquatic ecosystems, both lotic (running water) and lentic (standing water) ecosystems are well represented throughout the network of protected areas in the planning area. However, these waters are almost exclusively cold water systems. Warm water systems are not well represented within the SJNF and TRFO protected areas.

2.1.4 Ecosystem Management

Ecosystem management is an important integrating component of the sustainable ecosystems strategy. Ecosystem management uses an ecological approach to blend the social, economic, and ecological needs and values to assure productive, sustainable ecosystems, perpetuate natural disturbance regimes, and allow human uses that do not result in long-term ecological degradation (Kaufmann et al. 1994; Noss and Cooperrider 1994). Outside the designated protected areas described above, a wide range of public uses and management activities occur on TRFO and SJNF lands. For these lands, the application of sustainable ecosystem management principles is critical to maintaining ecosystems, providing for biological diversity, and maintaining populations of fish, wildlife, and plant populations. Ecosystem management on SJNF and TRFO lands, which uses the HRV for reference, will be implemented by maintaining or restoring the composition (plant species, animal species, and vegetation types), structure (size, density, and arrangement of live and dead vegetation, stream channel attributes), function (ecological processes and disturbances), and physical environment (soils, water, and geomorphology) of ecosystems. Ecological assessments specific to the SJNF and TRFO are used to describe current ecological conditions in and adjacent to the planning area (Romme et al. 2009; USFS 2005a). The ecosystem management approach will be implemented at multiple scales using terrestrial, riparian area and wetland, and aquatic ecosystems as the primary analysis units. The approach is intended to protect and maintain these ecosystems and ensure the diversity and population viability of the majority of species within them.

Species Management Strategy

Species that may not be adequately recognized or protected by the above ecosystems management approach, or whose specific habitat needs or other life requirements may not be fully met under the sustainable ecosystems strategy, will be given special management considerations, including the development of LRMP components that contribute to the conservation of those species. This species conservation approach is analogous to TNC's fine-filter approach that protects species with known conservation concerns (Hunter et al. 1988; Noss 1987; TNC 1982). The species conservation approach may be needed for species at risk of extinction, species that are highly vulnerable to disturbances, species whose habitat includes rare ecological components (rare soil types or geologic types) that occur at a very small scale, and species with unique hydrologic conditions. This approach may also be needed for special status species whose key habitat components are directly affected by agency management activities.

Special Status Species and Management Indicator Species

Special status species on TRFO and SJNF lands include federally listed species, species proposed for federal listing, candidate species for federal listing, Region 2 Regional Forester's sensitive species, and Colorado BLM State Director's sensitive species. Some of these species have immediate needs that may not be adequately recognized and addressed by the overall sustainable ecosystems strategy. As such, they are given special consideration, and additional LRMP components have been developed to address those special needs. In addition, current species-specific conservation plans and strategies are relied upon to address the needs of special status species. These plans and strategies are discussed within the applicable resource sections below and are analogous to TNC's fine-filter approach. LRMP components specific to special status species augment those components developed through the ecosystem management approach. A list of special status species can be found in Volume III, Appendix P.

USFS Management Indicator Species (MIS) serve several related functions in LRMP development and implementation. MIS are typically selected due to their responsiveness to land management activities and represent groups of species with similar needs. With these applications in mind, MIS are used to develop LRMP objectives for fish and wildlife populations and their habitats, analyze the degree to which LRMP alternatives meet those objectives, and ultimately monitor the effectiveness of LRMP implementation. Changes in MIS populations, or their habitats, may indicate how management has affected the composition, structure, or function of habitats and ecosystems, and help determine the need for change. The planning requirement to identify and address MIS is applicable only to NFS lands (36 CFR 219) and is not required by BLM planning regulations. The BLM does not identify MIS but instead monitors and reports on sensitive species populations as directed in BLM Manual 6840 (BLM 2008).

Species considered for inclusion as MIS on SJNF lands were developed using the following five categories:

- Endangered and threatened plant and animal species identified on state and federal lists;
- Species commonly hunted, fished, or trapped;
- Non-game species of special interest;
- Species with special habitat needs that may be influenced significantly by planned management programs; and
- Additional plant or animal species selected because their population changes are believed to indicate the effects of management activities on water quality.

Biological Diversity and Population Viability

The maintenance of biological diversity and population viability on SJNF and TRFO lands are addressed directly or inferred under a variety of laws, regulations, and policies specific to each agency. These include the NFMA, the MUSY, the FLPMA, and the Endangered Species Act of 1973 (ESA). Some of the supporting federal regulations, departmental regulations, and departmental manual direction include 36 CFR 219.19, Forest Service Manual (FSM) 2620, FSM 2622.01, and U.S. Department of Agriculture (USDA) Departmental Regulation 9500-4.

For lands managed by the USFS, 36 CFR 219.19 specifically requires that "[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area," and "[f]or planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to insure [sic] its continued existence is well distributed in the planning area." Regulation 36 CFR 219.26 requires that "[f]orest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity shall be considered throughout the planning process." In addition, the FLPMA specifies that special uses granted by the Secretary of Agriculture or the Secretary of the Interior are subject to terms and conditions that "minimize damage to fish and wildlife habitat and otherwise protect the environment." Agency actions should avoid or minimize impacts to species whose viability has been identified as a concern. USFS actions must not result in loss of population viability or create significant trends toward federal listing (FSM 2670.32).

BLM Colorado's Standards for Public Land Health (BLM Manual H-4180-1) describe the resource conditions and acceptable management practices for BLM lands. Standards of land health are expressions of levels of physical and biological condition or degree of function required for healthy lands and sustainable uses, and define minimum resource conditions that must be achieved and maintained. Standards are applied on a landscape scale and relate to the potential of the landscape. Standard 2 requires that riparian habitat associated with perennial streams functions properly, provides habitat, provides biodiversity, and meets water quality standards. Standard 3 specifies that wildlife and fish communities are maintained at viable population levels commensurate with habitat potential. Standard 4 requires that special status species and their habitats are maintained and enhanced.

In addition, the BLM's Special Status Species Management Manual requires that methods and procedures be identified in land use plans that ultimately bring sensitive species and their habitats to a condition in which management under sensitive species policies is no longer necessary (BLM Manual Section 6840.2B).

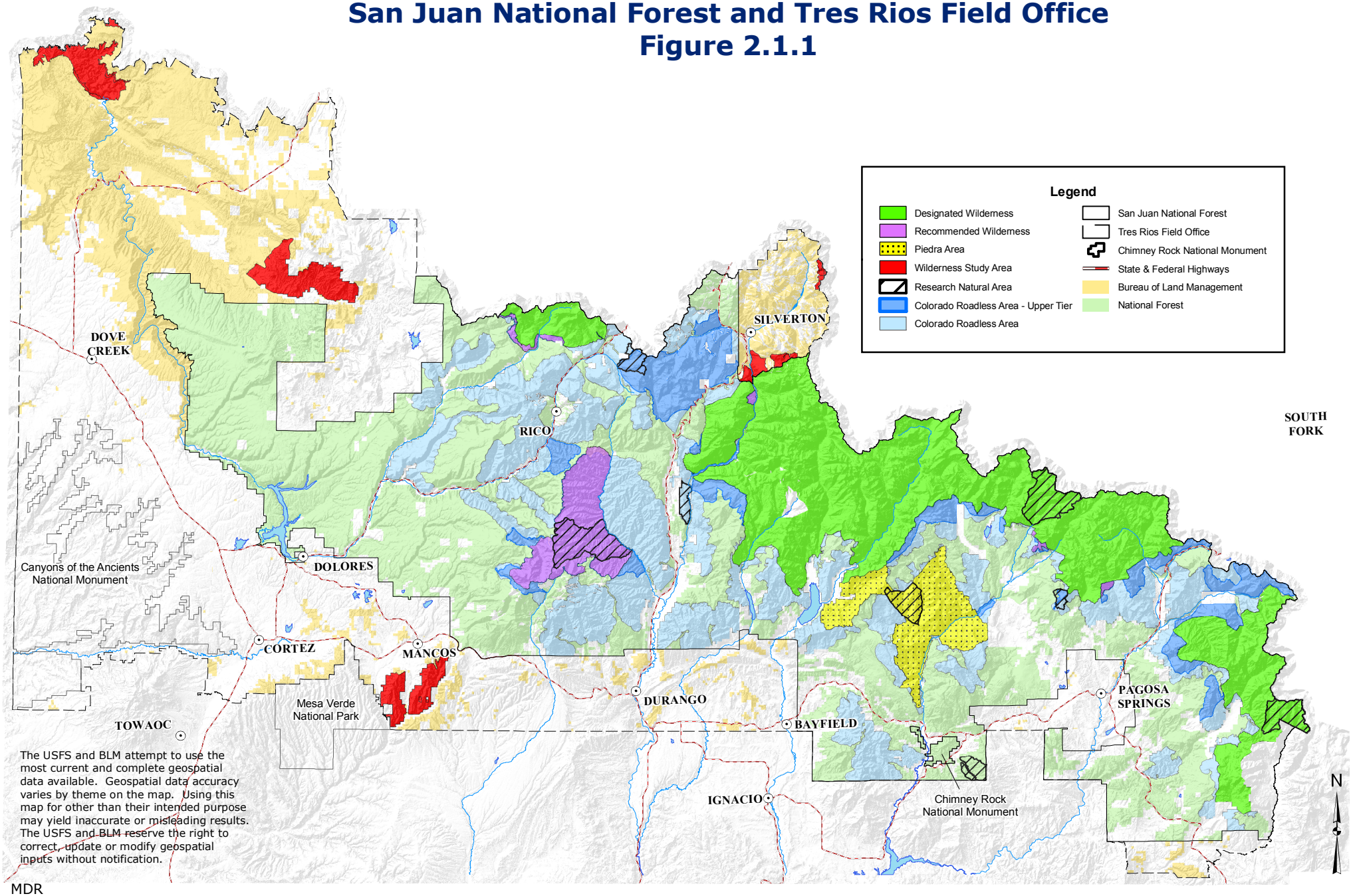
The SJNF and TRFO sustainable ecosystems and species management strategies combine to provide a foundation for addressing the legal, regulatory, and policy requirements described above. The underlying assumption is that implementing a management strategy that maintains sustainable ecosystems, along with a species strategy that addresses the specific needs of selected species, will provide for species diversity and long-term population viability, in as much as species diversity and population viability can be tied to the management of local federal lands. These two strategies are implemented through the LRMP components, which provide a framework for the management and protection of ecosystems, populations, and individual species occurring on SJNF and TRFO lands.

For each of the aforementioned ecosystem categories (riparian area and wetland ecosystems, aquatic ecosystems, and terrestrial ecosystems), specific management direction has been developed that is intended to address the legal, regulatory, and policy requirements for species diversity and population viability described above. The process applied was to identify a range of key ecosystem elements, determine the importance of those elements to maintaining species diversity and population viability (e.g. limiting factors), define desired future conditions and land management objectives for those elements, and ensure that appropriate management standards and guidelines are in place that address the ecological needs of species and populations. In general, management standards have been developed for those elements determined to have an overriding influence on species diversity or long-term population viability, while other elements that have less influence are typically addressed through the application of guidelines.

Protected Areas

San Juan National Forest and Tres Rios Field Office

Figure 2.1.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
July 8, 2013

0 10 20 40 Miles

2.2 Terrestrial Ecosystems and Plant Species

Introduction

Terrestrial ecosystems on the SJNF and TRFO occur in upland landscape positions where they depend on water derived from direct precipitation. They contain soils that are moderately well to very well drained and plants that are obligate-upland or facultative-dry species (Reed 1988). Terrestrial ecosystems are defined by soils, climate zones, and major vegetation types, the latter used for naming the ecosystems. Terrestrial ecosystems on the SJNF and TRFO include spruce-fir forests, aspen forests, cool-moist mixed conifer forests, warm-dry mixed conifer forests, ponderosa pine forests, pinyon-juniper woodlands, mountain shrublands, sagebrush shrublands, semi-desert shrublands, mountain grasslands, semi-desert grasslands, and alpine (Redders 2012). Topographic variability (which includes mountains, hills, and tablelands), diverse geology (associated with volcanism, metamorphism, sedimentation, and glaciation), and microclimatic features (soil moisture regime, soil temperature regime, aspect, and elevation) add to the diversity of terrestrial ecosystems on the SJNF and TRFO.

Terrestrial ecosystems encompass a majority of the land base and accompanying resources on SJNF and TRFO lands. Hence, management of these ecosystems is a critical part of the LRMP's sustainable ecosystems strategy, as previously described in Section 2.1.

Terrestrial ecosystems are used in the LRMP and FEIS to describe ecosystem diversity; analyze past, current, and future ecological conditions; describe environmental impacts from management activities; and provide for the development of LRMP components (desired conditions, objectives, standards, and guidelines). These ecosystems serve as broad-scale habitat types for terrestrial wildlife species, special status wildlife species, MIS, and plant species, and as such provide habitat conditions that maintain species diversity and population viability for most terrestrial wildlife and plant species. Terrestrial ecosystems and their ecological components will be monitored to determine if impacts from management activities are adversely affecting the composition, structure, abundance, distribution, and population viability of the plant and animal species that rely on those ecosystems for their habitat needs.

Terrestrial ecosystems and the ecological indicators associated with them are used in the LRMP and FEIS to detect changes to the ecosystems and species due to management activities, natural disturbances, and climate change. Physical indicators for terrestrial ecosystems include, but are not limited to, changes in soil conditions, changes to forested stand structure and distribution, and the abundance and distribution of desirable native plants species. Biological indicators include, but are not limited to, native plant species diversity, impacts to special status plant species and other rare plant species, and changes to the extent and distribution of invasive plants.

Plant species are an important component of terrestrial ecosystems on SJNF and TRFO lands. Ecological conditions that provide for ecosystem sustainability and diversity are the context for the evaluation and management of plant species. Managing for sustainable ecosystems by maintaining or restoring the composition, structure, and function of the terrestrial ecosystems, aquatic ecosystems, and riparian area and wetland ecosystems on SJNF and TRFO lands will protect and sustain the diversity of those ecosystems and the majority of species within them, but additional management emphasis is needed for some species that may not be adequately protected by the sustainable ecosystems strategy. The complementary special status species strategy (fine-filter) is intended to provide a safety net for rare species whose specific habitat needs or life requirements may not be fully met under the sustainable ecosystems strategy. This strategy may be needed for species at risk of extinction, species whose habitat includes rare ecological components (rare soil types or geologic types) that occur at a very small scale, species with viability concerns, species that are highly vulnerable to disturbance, and species with unique hydrologic condition needs. This strategy may also be needed for special status plant species that occur on lands where active management activities have a high probability of adversely affecting them.

There are currently a total of 38 special status plant species on the SJNF and TRFO. This includes three federally listed species, one candidate for federal listing, and 34 sensitive species. Designated critical habitat for one of the federally listed plant species also occurs on TRFO and SJNF lands. Currently, most special status plant species on SJNF and TRFO lands appear to have stable populations and trends. A list of the special status plant species known to occur or with habitat on the SJNF or TRFO is found in Volume III, Appendix P, along with a brief description of the habitats where they occur.

Background

Disturbances, including those caused by fire, insects, disease, drought, wind, floods, and humans (e.g., Native Americans and their burning practices) have played a fundamental role in shaping the composition, structure, and function of terrestrial ecosystems on SJNF and TRFO lands and in creating the heterogeneous pattern of vegetation that occurs across the planning area.

Past management activities (including historic timber harvest, oil and gas development, livestock grazing, recreation, fire suppression, utility corridor construction, and solid minerals development) resulted in many adverse impacts to the soils and vegetation of terrestrial ecosystems throughout the SJNF and TRFO over the last 100 years. Impacts from many of these activities, particularly those associated with oil and gas development, timber harvest, and past, unmanaged livestock grazing, are still evident. Many ponderosa pine forests and warm-dry mixed conifer forests have been significantly altered by heavy livestock grazing that began in the late 1800s, and later by timber harvest and fire suppression (Romme et al. 2009). Heavy livestock grazing decreased the abundance and distribution of native grasses that helped carry surface fire through these forests. Logging reduced the abundance and distribution of very large (and often very old) ponderosa pine (*Pinus ponderosa*) (and more recently, Douglas-fir [*Pseudotsuga menziesii*]), particularly on more accessible, gentle to moderate slopes.

Fire suppression began following the devastating fires of 1910 in the Northern Rockies. Coupled with the reduction in cover and amount of bunch grasses from grazing, much of the planning area (and other western forests and public lands) has undergone over 130 years of fire exclusion. These activities have 1) eliminated the frequent, low-severity fires that burned in these forests every 12 to 30 years (Grissino-Mayer et al. 2004); 2) altered plant species composition, vegetation stand structure, and fire regimes of many ponderosa pine forests and warm-dry mixed conifer forests on the SJNF and TRFO; and 3) created more homogenous vegetation conditions across the planning area. This has resulted in heavy accumulations of dead vegetation (including tree boles, tree and shrub branches, and leaves) and an abundance of stands with high tree densities and more closed canopy covers compared to HRV conditions. This has increased the risk—and occurrence—of epidemic insect and disease outbreaks (Schmid and Mata 1996); increased the risk of destructive wildfires that are larger, spread more rapidly, and are much hotter than they used to be making them increasingly difficult to control (Moir et al. 1997); allowed white fir (*Abies concolor*) (a shade-tolerant species) to increase; and reduced ponderosa pine regeneration (Moir et al. 1997; Wu 1999). Many ponderosa pine forests on the SJNF and TRFO are currently outside their HRV in terms of vegetation stand structure and fire frequency (Grissino-Mayer et al. 2004; Romme et al. 2009). Ponderosa pine and warm-dry mixed conifer forests also have less acres in both young and old growth development stages and have less diversity and less cover of native grasses compared to HRV conditions.

Other terrestrial ecosystems on SJNF and TRFO lands whose current conditions differ significantly from HRV conditions include 1) mountain grasslands, semi-desert shrublands, semi-desert grasslands, sagebrush shrublands, and pinyon-juniper woodlands, all of which have less diversity and less cover of native grasses compared to HRV conditions due to past and ongoing livestock management; 2) spruce-fir and cool-moist mixed conifer forests that have less acres in the young and mid development stages; and 3) aspen forests that have less acres in the young development stage. Some alpine ecosystems also display impacts associated with long-term domestic sheep grazing, recreation, and mining.

Approximately 57% of the SJNF and 11% of TRFO lands are within protected areas. A majority of the protected areas on the SJNF are found in high-elevation wilderness areas and mid-elevation roadless areas on the eastern two-thirds of the SJNF. Alpine areas, spruce-fir, aspen, cool-moist mixed conifer,

and warm-dry mixed conifer are well represented in these areas. Mountain grasslands dominated by Thurber fescue (*Festuca thurberi*), as well as mountain shrublands, and ponderosa pine are also well represented on the SJNF. Pinyon-juniper is well represented in protected areas found on TRFO lands. Desert shrublands, desert grasslands, and sagebrush are also found in protected areas on TRFO lands, but are not well represented.

Less than half of the special status plant species on SJNF and TRFO lands are found in habitats that are well represented within protected areas. Each of the federally listed plant species and the candidate for federal listing are found at low elevations outside protected areas or in habitat types that are not well represented in protected areas. Of the 29 sensitive plant species known to occur or with habitat on the SJNF and TRFO, 16 occur within areas well represented in protected areas (including fens, high-elevation wetlands, and alpine habitat). The remaining 13 species are found at lower elevations in habitats poorly represented or entirely absent from protected areas. This includes, but is not limited to, hanging gardens, low-elevation riparian areas and wetlands, and specific soil types such as gypsum and shale soils.

The management of terrestrial ecosystems and plant species on SJNF and TRFO lands includes protecting and sustaining the composition, structure, and function of the terrestrial, aquatic, and riparian/wetland ecosystems and the diversity and viability of the species within them, including special status plant and wildlife species. It also includes designating and preserving protected areas and reference sites; maintaining adequate ground cover (vegetation and litter); protecting the physical, chemical, and biological properties of soils; maintaining and restoring soil productivity; and preventing or minimizing adverse impacts from management actions. Tools for managing terrestrial ecosystems and plant species also includes using the best available science; developing vegetation and ecological classification systems; conducting vegetation, special status plant species, soils, and ecological inventories; identifying soil types and soil properties; identifying plants and plant communities; conducting biological assessments and evaluations; monitoring; and establishing RNAs, Areas of Critical Environmental Concern (ACECs), and special botanical areas.

Several LRMP components below and in other sections refer to NatureServe conservation status rankings (NatureServe 2013). NatureServe and its member Natural Heritage Programs have developed a consistent method for evaluating the relative imperilment of both species and ecological communities based on the best available science. These assessments lead to the designation of a conservation status rank. The three broad categories that factor into these rankings include rarity, trends, and threats. Conservation status rankings include secure (G5), apparently secure (G4), vulnerable (G3), imperiled (G2), critically imperiled (G1), possibly extinct or eliminated (GH), and presumed extinct or eliminated (GX). The Colorado Natural Heritage Program provides a similar state-wide conservation status rank (reported as “S” rankings). The USFS and BLM have a long history of partnership with NatureServe, and have collaborated on a broad range of projects in such areas as planning, sensitive species inventory and assessments, ecological classification and mapping, and data sharing and technology development.

Desired Conditions

2.2.1 The composition, structure, and function of terrestrial ecosystems are influenced by natural ecological processes, including disturbance events such as fire, infestations by insects or disease, winds, and flooding.

2.2.2 Non-climate ecosystem stresses (e.g., high road densities, water depletions, air and water pollution) are reduced to improve the resilience and resistance of ecosystems to the future dynamics of a changing climate.

2.2.3 Key ecosystems that are not functioning properly are realigned/restored/renovated to survive the near-future dynamics of changing climate.

2.2.4 Future biodiversity, especially for endangered, rare, or dwindling species, is protected in the face of a changing climate by safeguarding habitats, preserving genetic diversity, and cooperating with seed banking efforts that provide secure, long-term storage of plant genetic resources.

2.2.5 Terrestrial ecosystems have a diverse composition of desirable native plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.

2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Tables 2.2.1 and 2.2.2.

2.2.7 Old growth ponderosa pine, old growth pinyon-juniper and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on SJNF and TRFO lands.

2.2.8 Aspen forests display larger patches of the young-development stage.

2.2.9 Terrestrial ecosystems, including habitat for special status plant species, are productive, sustainable, and resilient, and provide goods and services over the long-term.

2.2.10 Forested terrestrial ecosystems display a Fire Regime Condition Class of 1.

2.2.11 Canyon escarpments, and the terrestrial ecosystems that occur on them, serve as refugia for native biota. These escarpments are associated with the following canyons: Lower Dolores River, Wild Steer, Coyote Wash Spring, McIntyre, Summit, Big Glade, Lake, Doe, Narraguinnep, Cabin, Ferris, Salter, Spruce Water, and Lost. They also include the Mesa Verde Escarpment.

2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased.

2.2.13 The abundance and distribution of Arizona fescue (*Festuca arizonica*) in ponderosa pine forest and in Arizona fescue mountain grasslands are maintained or increased.

2.2.14 Aspen forests, ponderosa pine forests, pinyon-juniper woodlands, sagebrush shrublands, semi-desert shrublands, mountain grasslands, and semi-desert grasslands that occur in suitable rangelands have a diverse composition of native bunchgrasses that are vigorous and self-perpetuating.

2.2.15 Forested terrestrial ecosystems have stand structures and tree species composition that offer resistance and resilience to changes in climate, including extreme weather events, or epidemic insect and disease outbreaks.

2.2.16 Non-forested terrestrial ecosystems have community structure and species composition that offer resistance and resilience to changes in climate, including extreme weather events, or epidemic insect and disease outbreaks

2.2.17 Local seeds of desirable native plant species are available for revegetation and restoration efforts.

2.2.18 Suitable habitats for species vulnerable to climate change exist and serve as seed sources for revegetation and restoration efforts.

2.2.19 The SJNF and TRFO forested ecosystems provide net positive carbon storage.

2.2.20 Five-needle pine species (southwestern white pine [*Pinus strobiformus*], limber pine [*P. flexilis*], and bristlecone pine [*P. aristata*]) are maintained as a component of forested ecosystems.

2.2.21 High-elevation stands dominated by aspen (*Populus tremuloides*) will be maintained or increased over time to ensure the persistence of aspen on the landscape in light of declining aspen health and loss of aspen in lower elevations associated with a warmer and drier climate.

2.2.22 Ponderosa pine, warm-dry mixed conifer, and cool-moist mixed conifer forest stands that are in the old growth development stage and that have not been previously harvested are managed for their old growth values through active or passive management.

2.2.23 **Ponderosa Pine Forests -** Ponderosa pine forests display variable density and structure. Most stands reflect uneven-age structure comprising variable-sized, even-aged clumps of trees. Clumps vary in size, ranging from as few as three trees to as many as 20 or more trees. Tree clumps vary in density from widely spaced large trees to tightly spaced small trees. Collectively, these forests contain multiple canopy layers. Between or surrounding these clumps are shrub- and/or grass/forb-dominated openings. Ponderosa pine seedlings and saplings are present, as are large old, yellow-barked ponderosa pine trees. The presence of other tree species—e.g., Douglas-fir, white fir, blue spruce (*Picea pungens*), or Rocky Mountain juniper (*Juniperus scopulorum*)—is infrequent to rare. The abundance and distribution of Gambel oak (*Quercus gambelii*) and other native shrubs in the understory of these forests is variable and includes small and large patches of all size classes. Native grasses and forbs (including bunchgrasses, Arizona fescue, muttongrass [*Poa fendleriana*], and mountain muhly [*Muhlenbergia montana*]) are present and well distributed in most ponderosa pine forests. Forest litter is common, though highly variable in depth and extent due to fire. Invasive plant species are absent or rare. Presence of snags or large wood (on the ground) is also highly variable due to fire. Low-intensity, high-frequency surface fires are common in most ponderosa pine forests (with frequencies ranging from about 12 to 30 years).

2.2.24 **Warm-Dry Mixed Conifer Forests -** Warm-dry mixed conifer forests display variable density and structure, similar to ponderosa pine forests, with added complexity in species composition. Most stands reflect uneven-age structure composed of variable-sized, even-aged clumps of trees. Some have open canopies with widely spaced trees, especially on warmer aspects; some are dense with more closed canopies (e.g., on cooler aspects). Composition is dominated by ponderosa pine. Douglas-fir is a typical minor component. Trees range from young to old. White fir, blue spruce, or limber pine may be present, but infrequent. Shrub- and/or grass/forb-dominated openings are common. The abundance and distribution of Gambel oak and other native shrubs in the understory of these forests is variable, and includes small and large patches of all size classes. Native grasses and forb (including tall bunchgrasses) are common and well distributed in most warm-dry mixed-conifer forests. Invasive plant species are absent or rare. Forest litter is common, though variable in depth and extent due to fire. Presence of snags or large wood (on the ground) is also variable due to fire. Low-intensity, surface fires occur in most warm-dry mixed conifer forests (with frequencies ranging from about 18 to 28 years). Tree species composition is closely tied to fire frequency, with Douglas-fir and white fir (or blue spruce) increasing during longer fire-free periods, and ponderosa pine increasing during shorter fire-free periods.

2.2.25 **Cool-Moist Mixed Conifer Forests -** Cool-moist mixed conifer forests display variable stand structures and species composition. Most are dense with closed canopies and multiple canopy layers. Tree species composition includes an abundance of Douglas-fir trees (ranging from young to old); other species include white or subalpine fir (*Abies lasiocarpa*), blue or Engelmann spruce (*Picea engelmannii*), aspen, or limber pine. Patches of cool-moist mixed conifer forest, ranging from small to large, are distributed across the landscape. The canopy cover of shrubs in the understory of these forests is highly variable. Native grasses and forbs are common and well distributed in most cool-moist mixed conifer forests. Forest litter is common and well distributed. Invasive plant species are absent or rare. Snags and large wood (on the ground) are abundant in late successional stages. Mixed-severity fires occur in most cool-moist mixed conifer forests (with frequencies of about 144 years). All development stages of these forests are well represented.

2.2.26 **Spruce-Fir Forests -** Spruce-fir forests display variable stand structures and species composition. Engelmann spruce is generally dominant; subalpine (or corkbark) fir makes up a lesser, but common, component. Bristlecone pine (*Pinus longaeva*), limber pine, aspen, white fir, or Douglas-fir are infrequent to rare and usually found on warmer, drier aspects. Most spruce-fir forests are dense with closed canopies and multiple canopy layers. Patches of spruce-fir forest, ranging from small to large, are distributed across the landscape. The canopy cover of shrubs in the understory of these forests is highly variable. High-elevation spruce-fir forest can have bristlecone pine, but is rare. Native grasses and forbs are common and well distributed in most spruce-fir forests. Forest litter is common and well distributed. Invasive plant species are absent or rare. Snags and large wood (on the ground) are abundant in most development stages. High-intensity, stand-replacement fires can occur in most spruce-fir forests (with frequencies longer than 200 years); most fires are of limited scale and variable intensity. All development stages of these forests are well-represented.

2.2.27 **Aspen Forests -** Aspen forests display simple to variable stand structures—generally simple where conifer is rare or absent or variable where conifer comprise a substantial portion (up to 49% of the canopy cover). Patches of aspen, ranging from small to large, are distributed across the landscape. Aspen is infrequent to rare in the lowest- and highest-elevation forests (ponderosa pine and spruce-fir, respectively), and common throughout mixed conifer forests. The canopy cover of shrubs in the understory of these forests is highly variable. Native grasses and forbs are abundant and well distributed in most aspen and aspen-conifer forests. Forest litter is common and well distributed. Invasive plant species are absent or rare. Snags and large wood (on the ground) are abundant in late successional stages. Fire frequency in aspen stands is about 140 years. All development stages of these forests are well-represented.

2.2.28 **Pinyon-Juniper Woodlands -** Pinyon-juniper woodlands display variable stand structures. Some have open structures with widely spaced trees; others are dense with high canopy covers. Most stands are uneven aged. Tree species composition varies in pinyon pine (*Pinus edulis*) and/or juniper (*Juniperus* sp.) abundance, ranging from young to old. The canopy cover and size of Gambel oak, sagebrush (*Atriplex* sp.), and other shrubs in the understory of these forests is variable. Native grasses and forbs are present and well distributed. Biological soil crusts and litter are common and well distributed on most sites. Invasive plant species are absent or rare. High-intensity, stand-replacement fires occur in most pinyon-juniper woodlands (with frequencies of 100 to 123 years).

2.2.29 **Mountain Shrublands -** Mountain shrublands display variable stand structures. Most are dense with high canopy cover; others are open with widely spaced shrubs. Gambel oak and other deciduous native shrubs (including mountain mahogany [*Cercocarpus montanus*], serviceberry [*Amelanchier* sp.], chokecherry [*Prunus virginiana*], fendlerbush [*Fendlera rupicola*], and squaw apple [*Peraphyllum ramosissimum*]) are abundant and well distributed. Native grasses and forbs are abundant and well distributed. Invasive plant species are absent or rare. Litter is common and well distributed. High-intensity, replacement fires occur in most mountain shrublands.

2.2.30 **Sagebrush Shrublands -** Sagebrush shrublands display variable stand structures. Some are open with widely spaced shrubs; others are dense. Some large patches are present. Sagebrush and other native shrubs are abundant and well distributed. Native perennial grasses (including Indian ricegrass [*Oryzopsis hymenoides*], galleta [*Pleuraphis* sp.], western wheatgrass [*Pascopyrum smithii*], and needle and thread [*Hesperostipa comata*]) are abundant and well distributed. Encroachment of pinyon and juniper trees is absent or rare. Invasive plant species are absent or rare. Biological soil crusts are common and well distributed on many sites. High-intensity, replacement fires occur in most sagebrush shrublands.

2.2.31 **Semi-Desert Shrublands -** Semi-desert shrublands are dominated by native shrubs that could include shadscale saltbush (*Atriplex confertifolia*), winterfat (*Krascheninnikovia lanata*), fourwing saltbush (*Atriplex canescens*), plains pricklypear (*Opuntia polyacantha*), rubber rabbitbrush (*Ericameria nauseosa*), spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus* sp.), and/or basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). Stand structures display open or

moderately dense shrubs with native perennial grasses and forbs in the openings between them. Native grasses (including Indian ricegrass, galleta, western wheatgrass, and needle and thread) are abundant and well distributed. Invasive plant species and/or undesirable native plant species that are currently abundant on most sites are absent or rare. Biological soil crusts and litter are common on most sites.

2.2.32 **Semi-Desert Grasslands -** Semi-desert grasslands are dominated by native perennial bunchgrasses (including Indian ricegrass, galleta, and needle and thread). Invasive plant species and/or undesirable native plant species that are currently abundant on most sites are absent or rare. Biological soil crusts and litter are common on most sites.

2.2.33 **Mountain Grasslands -** Mountain grasslands display moderate to high canopy cover of desirable native grasses and forbs (including Arizona fescue at mid elevations and Thurber fescue at higher elevations). Invasive plant species and undesirable native plant species that are currently abundant on many sites are absent or rare. Litter is common and well distributed.

2.2.34 **Alpine -** Alpine terrestrial ecosystems sustain their ecosystem diversity. They display a diverse composition of desirable native plant species and vegetation communities (including fellfield and turf types). Invasive plant species are absent or rare.

2.2.35 Soil productivity is maintained at site potential or is trending towards site potential.

2.2.36 Long-term levels of soil organic matter and soil nutrients (including soil carbon) are maintained at sustainable levels.

2.2.37 Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion.

2.2.38 Management-induced soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils are rare on terrestrial ecosystems of the SJNF.

2.2.39 Upland soils exhibit infiltration and permeability rates that minimize surface runoff and allow for the accumulation of the soil moisture necessary for plant growth and ecosystem function.

2.2.40 Biological soil crusts are maintained or increased in pinyon-juniper woodlands, sagebrush shrublands, semi-desert shrublands, and semi-desert grasslands.

2.2.41 Fens, wetlands, and hanging gardens have the water sources and hydrologic systems necessary to support and sustain the special status plant species associated with them.

2.2.42 Shale and gypsum soils have the characteristics necessary to support and sustain the special status plant species associated with them.

2.2.43 Soils that provide habitat for all special status plant species maintain the soil conditions necessary to support and sustain those species.

2.2.44 Areas that are identified as critical habitat or proposed critical habitat for federally listed plant species have the characteristics necessary to provide for the growth and reproduction of the federally listed plant species for which they were designated.

Table 2.2.1: Desired Conditions for Development Stages on the San Juan National Forest – National Forest Lands Only

Terrestrial Ecosystem	Development Stage	Structural Stage*	Current Condition NFS Lands (% of veg type)	Desired Condition NFS Lands (% of veg type)	Historic Range of Variation (% of veg type)	Current % of Veg Type in Old Growth**	Desired % of Veg Type in Old Growth**
Spruce-fir forest	Young	2	2	10–20	0–45	26.50%	25–35%
	Mid-open	3a	4	10–15	5–47%		
	Mid-closed	3b,c	3	10–15	5–47%		
	Mature-open	4a	15	15–20	#		
	Mature-closed	4b,c	77	15–20	#		
Cool-moist mixed conifer forest	Young	2	0	10–20	1–36	17.00%	20–30%
	Mid-open	3a	1	10–15	8–49		
	Mid-closed	3b,c	5	10–15	8–49		
	Mature-open	4a	7	15–20	#		
	Mature-closed	4b,c	87	15–20	#		
Warm-dry mixed conifer forest	Young	2	0	5–10	1–10	13.10%	20–30%
	Mid-open	3a	1	5–10	5–14		
	Mid-closed	3b,c	6	5–10	5–14		
	Mature-open	4a	11	35–45	#		
	Mature-closed	4b,c	82	15–25	#		
Ponderosa pine forest	Young	2	0	5–10	1–14	4.30%	10–15%
	Mid-open	3a	3	5–10	4–14		
	Mid-closed	3b, c	2	5–10	4–14		
	Mature-open	4a	42	40–60	#		
	Mature-closed	4b,c	53	15–25	#		
Aspen forest	Young	2	10	15–25	1–55	4.30%	5-15%
	Mid-open	3a	3	10–15	4–55		
	Mid-closed	3b,c	19	15–20	4–55		
	Mature-open	4a	7	25–30	35–86		
	Mature-closed	4b,c	61	25–30	35–86		

* 2, 3, and 4 refer to tree size (diameter at breast height [dbh]): 2 = <1 inch dbh; 3 = 1–8.99 inches dbh; 4 = >9 inches dbh; a, b, and c refer to tree crown closure percent in a stand : a = < 40%; b = 40–70%; c = >70%.

** Old growth inclusions may be found in various habitat structural stages within each vegetation type.

= No data available.

Table 2.2.2: Desired Conditions for Development Stages on Tres Rios Field Office Lands – Bureau of Land Management Lands Only

Terrestrial Ecosystem	Development Stage	Structural Stage*	Current Condition BLM Lands (% of veg type)	Desired Condition BLM Lands (% of veg type)	Historic Range of Variation (% of veg type)
Spruce-fir forest	Young	1,2	0	10–20	0–45
	Mid-open	3a	12	10–15	5–47%
	Mid-closed	3b,c	4	10–15	5–47%
	Mature-open	4a	14	15–20	#
	Mature-closed	4b,c	69	15–20	#
Cool-moist mixed conifer forest	Young	1,2	0	10–20	1–36
	Mid-open	3a	48	10–15	8–49
	Mid-closed	3b,c	36	10–15	8–49
	Mature-open	4a	1	15–20	#
	Mature-closed	4b,c	15	15–20	#
Warm-dry mixed conifer forest	Young	2	0	5–10	1–10
	Mid-open	3a	14	5–10	5–14
	Mid-closed	3b,c	24	5–10	5–14
	Mature-open	4a	7	35–45	#
	Mature-closed	4b,c	55	15–25	#
Ponderosa pine forest	Young	2	0	5–10	1–14
	Mid-open	3a	24	5–10	4–14
	Mid-closed	3b, c	36	5–10	4–14
	Mature-open	4a	11	40–60	#
	Mature-closed	4b,c	29	15–25	#
Aspen forest	Young	2	1	15–25	1–55
	Mid-open	3a	22	10–15	4–55
	Mid-closed	3b,c	62	15–20	4–55
	Mature-open	4a	1	25–30	35–86
	Mature-closed	4b,c	14	25–30	35–86

* 2, 3, and 4 refer to tree size (diameter at breast height): 2 = <1 inch dbh; 3 = 1 – 8.99 inches dbh; 4 = >9 inches dbh; a, b, and c refer to tree crown closure percent in a stand: a = < 40%; b = 40–70%; c = >70%.
# = No data available
The TRFO does not currently have old growth inventory data.

Objectives

2.2.45 Within 10 years, restore or improve soil productivity and soil carbon on at least 20 miles of road that will be closed or decommissioned on the SJNF and 5 miles of routes that will be closed or decommissioned on TRFO lands.

2.2.46 Within 10 years, increase the canopy cover of Arizona fescue by at least 10% in two Arizona fescue mountain grassland sites on the SJNF that currently classify as Kentucky bluegrass mountain grasslands by using mechanical treatments, prescribed fire, and/or seeding.

2.2.47 Within 10 years, inventory and map stand structure changes that have resulted from spruce beetle (*Dendroctonus rufipennis*) mortality and wildfire on both SJNF and TRFO lands.

2.2.48 Within 15 years, on suitable timber lands of the SJNF reforest 15% of spruce-fir forests that have extensive mortality of overstory spruce that do not have appropriate forest cover and will not reforest within 15 years.

2.2.49 Within 15 years, increase the young development stage of cool-moist mixed conifer forests on the SJNF from 0.5% to 15% by using prescribed fire and mechanical treatments (e.g., timber harvest) in the mature cool-moist mixed conifer forests.

2.2.50 Within 15 years, increase the young development stage of aspen forests on the SJNF to 25% by clear-cutting and/or conducting prescribed fire in mature aspen stands, and mixed conifer stands with an aspen component.

2.2.51 Over the next 15 years, manage 2,000 acres of high-elevation aspen stands on SJNF lands that are conifer-dominated or at risk of converting to conifer-dominated stands to maintain or increase aspen forests.

2.2.52 Within 15 years, increase the percent of ponderosa pine forests in the young development stage from 0% to 3% on SJNF and TRFO lands by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).

2.2.53 Within 15 years, increase the percent of warm-dry mixed conifer forests in the young development stage from 0% to 3% on SJNF and TRFO lands by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).

2.2.54 Within 15 years, improve the composition, structure, and function of 30,000 acres of ponderosa pine forests by using low-intensity fire (25,000 acres on the SJNF and 5,000 acres on TRFO lands).

2.2.55 Within 10 years, increase the cover of Arizona fescue by at least 20% within two ponderosa pine stands on the SJNF by using mechanical treatments, prescribed fire, and/or seeding.

2.2.56 Within 15 years, improve the abundance and distribution of perennial native bunchgrasses on 3,000 acres of semi-desert shrublands or semi-desert grasslands on TRFO lands.

2.2.57 Over the next 15 years, secure a reliable source of local seed stock for 16 or more native grass, forb, and shrub species (including Arizona fescue) to be used for revegetation and restoration after disturbance (eight species on the SJNF and eight species on TRFO lands).

2.2.58 Over the life of the LRMP, collect seed from 20 local vulnerable grass, forb, and shrub species, including some alpine species, for long-term storage to protect genetic sources (10 species on the SJNF and 10 species on TRFO lands).

2.2.59 Use locally produced biochar to sequester carbon, reduce erosion, and enhance soil productivity and water retention on a minimum of 1 acre per year (0.5 acre per year on the SJNF and 0.5 acre per year on TRFO lands) for five years.

2.2.60 After natural disturbance events or on restoration projects over the next 15 years, increase the variety of native non-commercial tree species and native shrubs used on a minimum of 100 acres (75 acres on the SJNF and 25 acres on TRFO lands).

2.2.61 Over the next 15 years, broaden tree seed collection activities on the SJNF to include non-commercial species and additional species specific elevation zones to improve genetic diversity and the resilience of forested ecosystems.

2.2.62 Over the next 15 years, revegetate and reclaim 10 acres using native early-successional plant species developed from local plant sources to accelerate restoration success (5 acres on SJNF and 5 acres on TRFO lands).

2.2.63 Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine dependent species on 100 acres of TRFO lands through implementing recreation management plans, completing mine land reclamation, or conducting other management activities.

2.2.64 Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine-dependent species by removing non-climate stressors that result in adverse impacts to alpine ecosystems (e.g., unmanaged livestock grazing, unmanaged motorized recreation) from 100 acres on SJNF lands that are forb-dominated alpine habitat.

Standards

2.2.65 The construction of new permanent roads and utilities must not occur in protected areas in order to protect the ecological integrity of the terrestrial ecosystems within them, prevent ecosystem fragmentation, prevent the disruption of wildlife travel corridors, and prevent the establishment and spread of invasive plants.

2.2.66 Projects or activities in habitat occupied by federally listed plant species, or in designated critical habitat, must be designed and conducted in a manner that preserves the primary constituent elements needed to sustain the life history processes of those federally listed plant species.

2.2.67 Projects or activities occurring in fens, wetlands, or hanging gardens that are occupied by special status plant species must be designed to maintain the hydrologic systems necessary to support and sustain those species.

2.2.68 Projects or activities that occur in shale and gypsum soils that are occupied by special status plant species must be designed to maintain the soil characteristics necessary to support and sustain those species.

Guidelines

2.2.69 Agency actions should not adversely affect the long-term soil productivity or carbon storage of terrestrial ecosystems.

2.2.70 Ground-disturbing management activities should not occur on lands that have a high potential for mass movement, including lands associated with SJNF and TRFO soil survey map units 254, 386, 606, 720, 926, 20511D, 30506D, 34301D, 34306D, 34506D, 50803D, 50806D, 70806D, 70807D, 74803D, 80604D, 80803D, and 80804D, or lands that display evidence of slope instability, unless site-specific field analysis indicates that mass movement is not likely to occur on those lands.

2.2.71 Projects or activities occurring in suitable habitat for federally listed plant species should be managed to minimize long-term impacts to the suitable habitat.

2.2.72 Agency actions should avoid or otherwise mitigate long-term adverse impacts in terrestrial ecosystems that have plant communities with G1 or G2 NatureServe Plant Community conservation status ranks in order to maintain the ecological integrity of those rare plant communities.

2.2.73 Agency actions should be designed to avoid or minimize impacts in canyon escarpments, unless the activity is designed to maintain or restore the composition, structure, or function of the terrestrial ecosystems within those escarpments.

2.2.74 Prior to any proposed agency actions on forested lands or woodlands, the affected stands should be screened against the current SJNF old growth database in order to determine their old growth status. Within landscapes not meeting desired conditions for old growth, ponderosa pine forest stands and mixed conifer forest stands that currently are not in the old growth development stage, but that contain significant old growth attributes should be prioritized as old growth recruitment areas, largely based on tree age and distribution across the SJNF, and managed for their old growth values.

2.2.75 Ground-disturbing projects on shale soils of the Mancos Shale, Lewis, Fruitland, and Morrison geologic formations, and other highly erosive soils, should be designed to include efforts that avoid or mitigate soil erosion or compaction (see Volume III, Appendix I).

2.2.76 Ground-disturbing activities in watersheds that are highly sensitive to anthropogenic disturbances, as identified in Volume III, Appendix I, should be designed to avoid or mitigate soil erosion or compaction.

2.2.77 Adequate slash (including tree tops and limbs), if deemed necessary for soil protection or nutrient cycling, should be left on-site following timber harvest and mechanical fuels treatments, and distributed as needed.

2.2.78 Wood chips produced by mastication treatments should be dispersed on the ground at a maximum depth of 3 inches over at least 80% of the covered area, and no chip piles should exceed 6 inches in depth.

2.2.79 Management activities in areas with biological soil crusts should be designed to minimize adverse impacts to the soil crusts.

2.2.80 Ground disturbance should be limited or otherwise mitigated on gypsum soils and organic soils (histosols) in order to protect the ecological integrity of these rare and unique soils and the rare plants associated with these soils.

2.2.81 Management activities should not decrease the abundance or distribution of southwestern white, limber, or bristlecone pine trees in order to maintain white pine species in SJNF forested environments.

2.2.82 Clearcuts in aspen forest stands that are 20 acres or greater should include wildlife leave tree groups of 0.5 to 5 acres in size on 10% to 15% of the clearcut. Where possible groups should have the following characteristics: live and/or dead large-diameter wood on the forest floor (greater than 15 inches diameter at breast height [dbh]), trees with evidence of cavities, broken or dead tops, or lightning strikes. Basal areas should exceed 100 square feet per acre.

2.2.83 Following timber harvest and mechanical fuels treatments, snags and large wood on the forest floor should meet the minimum standards described in Table 2.2.3 unless the stand did not contain these attributes before the activity, in which case treatments should be designed to help meet those standards in the future.

2.2.84 Certified, weed-free native seed mixes of local ecotypes should be used to revegetate terrestrial ecosystems where commercially available. Non-native, non-invasive plant material may be used in limited situations where considered necessary in order to protect resources and/or stabilize soils in a timely fashion. Persistent non-natives or invasive exotic plant species should be avoided.

2.2.85 If the desired conditions for the development stage of a terrestrial ecosystem type (see Tables 2.2.1 and 2.2.2) are underrepresented, management activities should be designed to move that development stage closer to the desired conditions, particularly in watersheds lacking the development stage.

2.2.86 Revegetation and reforestation plans or activities should consider the following strategies to maintain or improve resilience of forested and non-forested ecosystems:

- use a variety of species and phenotypes;
- emphasize use of native species, collected locally;
- use both commercial and non-commercial species for reforestation (non-commercial species include southwestern white, limber or bristlecone pine); and
- use seed collected from across the range of climate zones.

Table 2.2.3: Desired Conditions for Snags and Large Wood on San Juan National Forest and Tres Rios Field Office Lands

Forest Type	Snags			Large Downed Wood	
	Minimum Diameter (dbh)	Number (per acre)	Minimum Height (feet)	Minimum Diameter (dbh)	Number (linear feet per acre)
Spruce-fir forests	15	3–5	25	15	200
	9*	5–10			
Cool-moist mixed conifer forests	15	2–3	25	15	150
	9*	5–10			
Aspen	9	5–10	25	9	150
Warm-dry mixed conifer forests	15	1–2	25	15	80
	9*	3–5			
Ponderosa pine forests	15 (12)	1	25 (15)**	15 (12)**	30
	9*	2–3			

Note: Quantities are based on an average per acre basis across treatment units. dbh = diameter at breast height.
*If larger trees are not available, then the smaller minimum will apply and requires the greater number per acre range.
**Numbers in parentheses apply to Dolores Ranger District and adjacent TRFO lands. Due to past harvest activity on the Dolores Ranger District and adjacent TRFO there is a lower abundance of larger snags available for habitat.

Additional Guidance

- Executive Order (EO) 13112
- Plant Protection Act of 2000
- Cooperative Forestry Assistance Act of 1978
- Resource Conservation and Recovery Act of 1976
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA)
- Forest Service Handbook (FSH) 2509.13, Burned Area Rehabilitation Handbook
- FSH 2509.25, Watershed Conservation Practices Handbook

- FSH 2409.19, Renewable Resource Uses for Knutson-Vandenberg (K-V) Fund Handbook
- 1992 letter from USFS Region 2 Regional Forester to Forest Supervisors regarding regional old growth descriptions (USFS 1992b)
- FSH 2509.13, Burned Area Emergency Rehabilitation
- FSH 2509.25, Watershed Conservation Practices Handbook (Region 2 Supplement)
- FSM 2600, Wildlife, Fish, and Sensitive Plant Habitat Management
- BLM Manual 6840, Sensitive Species Management (2008)
- FSM 2550, Soil Management
- IM 2006-073: Weed-Free Seed Use on Lands Administered by the BLM (BLM 2006a)

2.3 Terrestrial Wildlife

Introduction

Lands administered by the SJNF and TRFO have long served an important role in supporting a wide variety of wildlife species that are critical to the needs and values of the human population. Currently, the wildlife resource remains a cherished and important aspect to the people who live within and/or visit the planning area.

A wide variety of ecosystem types represent broad-scale habitat types on SJNF and TRFO lands. These ecosystems are described in detail in sections 2.2 and 2.4 of this LRMP and in corresponding sections in the FEIS. The soils, landforms, climate regimes, and major vegetation types associated with these ecosystems provide a diverse array of habitat conditions ranging from alpine tundra at the highest elevations to semi-desert shrublands and grasslands at the lowest elevations. Cliffs, caves, streams, waterfalls, and open water bodies also provide important wildlife habitat on the SJNF and TRFO. Based on species distribution maps for Colorado, over 300 wildlife species use the ecosystem diversity of SJNF and TRFO lands to meet their habitat needs (Fitzgerald et al. 1994; Hammerson 1999; Kingery 1998). Additional species may also pass through during migration and utilize habitats on or near the planning area for feeding or resting purposes.

Wildlife is a primary component of ecosystem function and an important part of the sustainable ecosystem strategy for SJNF and TRFO lands. They also provide substantial renewable economic values on which local communities depend. The categories and types of wildlife species on the SJNF and TRFO reflect the diversity of habitats available to them. Some species, such as mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus canadensis*), are steeped in the local culture and tradition and have long been important to the local people and communities. However, many non-game species are recognized for the economic, aesthetic, and ecological values they provide. Some of the wildlife species that occur on the SJNF and TRFO are migratory and/or wide-ranging and utilize several different habitat types while others are more sedentary and utilize only a single vegetation type or individual component within a vegetation type. All species contribute to or influence the ecological processes that maintain biodiversity on the SJNF and TRFO.

The LRMP provides guidance for project-level implementation to maintain or move the planning landscape toward desired conditions for wildlife habitat. Human population increases and better resource information are creating additional demands on wildlife resources that include increasing trends in recreation uses, extractive uses, and travel demands. The mix of multiple use management on the landscape can affect habitat effectiveness and wildlife populations in different ways. The LRMP guidance provides for multiple uses on the planning area that fall within the limits for maintaining the ecological integrity of ecosystems and protection of wildlife habitat.

Objectives for terrestrial wildlife and other resource programs will contribute to the maintenance of and/or improved wildlife habitat conditions (as described in Section 2.2). LRMP components described in other resource programs will also help the SJNF achieve terrestrial wildlife desired conditions (see Volume III, Appendix M). For example, the ponderosa pine restoration direction under the fuels section of the LRMP (see Section 2.11) is restoration of conditions to meet fuels objectives, but this direction will also be

designed to provide habitat characteristics (within the pine type) that benefit terrestrial wildlife. Benefits of these fuels objectives extend to a variety of wildlife species utilizing this habitat type. All objectives are subject to future funding and available resources.

Management of effective habitat provides, in part, for the maintenance of viable populations of existing native and desired non-native wildlife distributed throughout their current geographic range on SJNF lands, as well as sustainable populations across the TRFO. Other elements also support the ecological framework on which wildlife species depend. As discussed in Section 2.2, these ecosystems provide basic components, including soils, vegetation, climate, air, water, and physical character of the land, that support and provide for a diversity of terrestrial wildlife within this ecosystem matrix that are well distributed across the planning area.

Habitat assessments that include condition and trends on the SJNF have identified several major factors that have influenced change in forested and non-forested habitat conditions during the reference period. Factors include fire exclusion, timber harvesting, road and urban development, livestock grazing, and recreational uses associated with a rapidly growing human population. These conditions and trends have implications for wildlife species and populations that include:

- changes in forest structure and composition that may contribute to uncharacteristic wildfire behavior in lower-elevation forest types;
- disturbance from motorized use on roads and motorized trails;
- introduction and expansion of invasive plant species that reduces native plant diversity, wildlife habitat quality, connectivity, and reduces wildlife habitat effectiveness;
- reduction or degradation of habitats for some wildlife species where human impacts have occurred and/or where natural disturbance regimes have been altered;
- urban development and associated human disturbance in key seasonal wildlife use areas such as winter range and production areas; and
- rapidly increasing human populations and influences on the landscape that alter habitat security and contribute disturbance impacts to wildlife.

These impacts can alter habitat effectiveness and influence wildlife across the planning area. Habitats and their structural stages on SJNF lands have been monitored since the first SJNF Plan was signed in 1983, and trends have been established and recorded in habitat assessments for SJNF lands. In general, management has resulted in only relatively small changes to the vegetation condition across the SJNF since the inception of the 1983 SJNF Plan. Habitat types are well distributed across the landscape providing continuity and connectivity within and among important wildlife habitats. Trend analysis of major wildlife habitat types across the SJNF indicate that the maximum change for habitat type and structural stage has not varied by more than 5% on the landscape since the inception of the initial 1983 SJNF Plan. Most individual structural stages within each habitat type have not varied by more than 0% to 2% across the SJNF. These changes are attributed to both management actions and natural events such as wildfire. Habitat condition and plan components of the 1983 SJNF Plan have maintained sustainable wildlife populations across the planning area. Management of habitat in conjunction with the components in this LRMP is expected to continue to provide for population viability on NFS lands and maintain or move habitat conditions toward meeting desired conditions across the SJNF and TRFO.

The emphasis of the SJNF wildlife program is to provide ecological conditions to support all native and desired non-native terrestrial wildlife species over the life of the LRMP and contribute to the stability and recovery of special status species. To achieve these conditions a sustainable ecosystems strategy is used in this LRMP to provide a range of habitat conditions and provide the ecological framework for the conservation and management of ecosystems, habitats, and species occurring on SJNF and TRFO lands. The sustainable ecosystems strategy includes a four-pronged approach: 1) the designation and management of protected areas, 2) the application of ecosystem management using sustainable ecosystem concepts, 3) the development and application of the LRMP components (desired conditions, objectives, standards, and guidelines) that provide a framework for the management and preservation of ecosystems, and 4) the monitoring of effects of management activities on SJNF and TRFO lands with

application of adaptive management principles in response to monitoring results. This approach is expected to provide for viable populations on NFS lands and the diversity, sustainability, and maintenance of wildlife populations across the planning area. Each of these four applications is described in more detail below:

- **Designation and management of protected areas:** Protected areas are inclusive of large tracts of wildlife habitat types well distributed across the planning area. They will serve as conservation reserves and refuges to protect the native biodiversity within them and will provide wildlife movement corridors and linkage areas that connect landscapes and habitats, which facilitates the interaction of animals. Establishing and preserving protected areas within and between TRFO and SJNF lands is a means to maintain ecosystem diversity, which presumably will protect the diversity and sustainability of native plant and animal species and communities, and the ecological processes occurring within those ecosystems across the planning area, along with the viability of wildlife species on NFS lands. They cover approximately 11% of lands administered by the TRFO and include a variety of lower-elevation ecosystems. These tracts are capable of supporting sustaining populations of many wildlife species associated with these types. Approximately 54% of the SJNF lies within protected areas and includes much of the alpine and mid to upper montane wildlife habitat types. These tracts are capable of supporting sustaining populations of wildlife associated with these types.

  Outside protected areas the land is subject to greater management emphasis in order to supply a wider diversity of goods and services under multiple use management. LRMP components are developed to assure management use of the land occurs in a sustainable manner that is not limiting to the ecosystem, including terrestrial wildlife species.

- **Application of ecosystem management using sustainable ecosystem concepts:** Ecosystem management is the integrating component of the sustainable ecosystems strategy. Ecosystem management on TRFO and SJNF lands, which uses the HRV for reference, will be implemented by maintaining or restoring the composition (plant species, animal species, and vegetation types), structure (size, density, and arrangement of live and dead vegetation, stream channel attributes), function (ecological processes and disturbances), and physical environment (soils, water, and geomorphology) of ecosystems. The approach is intended to protect and maintain these ecosystems and ensure the diversity, contribute to population viability on SJNF lands, and provide for sustainable wildlife populations across the planning area of the majority of species within them. Desired conditions, objectives, standards, and guidelines for management of terrestrial ecosystems are presented in Section 2.2.

  When managing for viability on SJNF lands, and sustainability or diversity and maintenance of wildlife populations across SJNF and TRFO lands, it must be recognized that many population-level stressors are largely outside the control of the BLM and the USFS and many wildlife populations are landscape-level species that use a variety of habitats outside the planning area. The overall goal is to provide management of habitat on federal lands within the planning area that have all components needed for a species within various life stages. As most management activities occur on habitats outside protected areas, LRMP components are necessary to provide for and maintain ecosystem characteristics supporting populations on the matrix of actively managed lands. LRMP components have been developed to mitigate and/or minimize these influences on wildlife populations across the planning area.

- **Development and application of the LRMP components:** Wildlife species that may not be adequately recognized or protected by the above ecosystems management approach, or whose specific habitat needs or other life requirements may not be fully met under the sustainable ecosystems strategy, are given special management considerations below, including the development of LRMP components that contribute to

the conservation of those species. This approach may also be needed for special status species whose key habitat components are directly affected by agency management activities. Special status species on the SJNF and TRFO include federally listed species, species proposed for federal listing and proposed critical habitat, candidate species for federal listing, Region 2 Regional Forester's sensitive species, and Colorado BLM State Director's sensitive species. Some of these species have immediate needs that may not be adequately recognized and addressed by the overall sustainable ecosystems strategy. As such, they have been given special consideration and additional LRMP components below, developed to address those special needs. In addition, current species-specific conservation plans and strategies will be relied upon to address the needs of special status species. These plans and strategies are analogous to TNC's fine-filter approach, which is intended to protect species with known conservation concerns (Hunter et al. 1988; Noss 1987; TNC 1982). LRMP components specific to special status species augment those components developed through the ecosystem management approach. Species lists for the TRFO and SJNF are found in Volume III, Appendix P. Guidance for amphibians is included in Section 2.5, and guidance for migratory birds is found under the specific agency agreements with the U.S. Fish and Wildlife Service (USFWS) and listed within "Additional Guidance" at the end of this section.

Highlight species were also used as a planning tool in the development of the ecosystem management approach in this LRMP. Certain species representing a broad spectrum of conditions and needs across the planning area were selected in order to develop a strategy around those conditions and needs. Highlight species have no legal status, and no specific BLM or USFS policy or direction associated with them; they serve no further functionality past development of the ecosystem management approach and various LRMP components. LRMP components that provide direction for selected highlight species are summarized in Volume III, Appendix M.

- **Monitoring and adaptive management:** Effective monitoring and evaluation of how management activities on SJNF and TRFO lands are affecting ecosystems and wildlife, and the application of adaptive management principles, will be critical to maintaining functional, sustainable ecosystems and addressing the needs of dependent species. Refer to Chapter 4 below for a description of the wildlife monitoring requirements and the data sources and methodology that apply to wildlife population and habitat monitoring.

  MIS are species monitored in order to assess the effects of management activities, related to specific management issues, on their populations and on the habitats with which they are associated. MIS is a USFS requirement and are not applicable to BLM lands. Monitored changes in MIS populations could indicate that current management is adversely affecting the composition structure, or function of associated habitats, affecting the management issue for which they were selected. This could result in indications that LRMP direction and desired conditions are not being met and indicate the need for adaptive management. Table 2.3.1 shows terrestrial wildlife MIS selected from the represented categories (see the ecosystem framework, Section 2.1), habitats of concern, and management issues addressed for the SJNF.

Table 2.3.1: Terrestrial Wildlife Management Indicator Species on the San Juan National Forest

Management Indicator Species	Habitat of Concern	Management Issue Addressed
Abert's squirrel (*Sciurus aberti*)	Ponderosa pine forests	Effects to species and habitat associated with timber harvest and fuels treatments
American marten (*Martes americana*)	Spruce-fir and cool-moist mixed conifer forests	Effects to species and habitat associated with recreation and timber harvest
Hairy woodpecker (*Picoides villosus*)	Ponderosa pine, aspen, and mixed conifer forests	Effects to species and habitat associated with timber harvest and fuels treatments
Elk (*Cervus elaphus*)	Severe winter range and winter concentration areas (pinyon-juniper woodlands, sagebrush shrublands, mountain shrublands, and ponderosa pine forests)	Effects to species and habitat associated with recreation, fuels treatments, oil and gas development, and timber harvest

LRMP components are also directly linked to providing for management of habitat to address population viability on NFS lands. Identified ecosystem elements that contribute to viability, such as physical habitat, biological factors, human factors, and species-specific factors are listed in Volume III, Appendix Q. As described in Section 2.1, management direction has been developed that is intended to address the legal, regulatory, and policy requirements for species diversity and population viability (USFS lands) for terrestrial wildlife species, including associated special status wildlife species. The desired future conditions, management objectives, and standards and guidelines listed below for wildlife and special status species, as well as the other identified LRMP components, support those elements found to be most critical to the maintenance of species diversity and population viability on SJNF lands.

LRMP implementation will involve close coordination with the CPW and the USFWS. In particular, the SJNF and TRFO consider these agencies to be the best source of population data for distribution and range maps and will coordinate closely with them to keep habitat data current during plan implementation. Partnerships with other state and federal agencies, as well as with tribal governments and other interested organizations and individuals, will help the SJNF and TRFO better manage for wildlife habitats and populations. These cooperative efforts will serve as an important way to achieve desired conditions and to accomplish multiple-use plan objectives.

Desired Conditions

2.3.1 Wildlife populations are viable on SJNF lands. Wildlife populations are self-sustaining, connected, and genetically diverse across SJNF and TRFO lands.

2.3.2 Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet state population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance which do not reduce habitat effectiveness.

2.3.3 Invasive exotic wildlife species and diseases do not become established within the planning area. Existing invasive exotic wildlife species and diseases do not spread.

2.3.4 Habitat components (e.g., snags and downed logs) are maintained. Unique habitat types (e.g., springs, seeps, willow carrs, caves, and cliffs) support associated flora and fauna (with abundance and distribution commensurate with the capability of the land).

2.3.5 Large predator species contribute to ecological diversity and ecosystem functioning.

2.3.6 Projects and activities occurring on USFS and BLM lands near state and federal highways are designed to provide for long-term connectivity and integrity of habitats to facilitate effective wildlife movement.

2.3.7 Snag and downed wood features occur in quantities that support self-sustaining populations of associated species.

2.3.8 Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations.

2.3.9 Ecosystems and habitat conditions for terrestrial wildlife species sensitive to human disturbance are maintained.

2.3.10 Vegetation openings created through management actions preserve the natural patchiness inherent in Southern Rocky Mountain ecosystems.

2.3.11 Habitat continuity and travel corridors exist and persist to facilitate species movement and establishment into newly suitable areas as a result of changing habitats.

2.3.12 Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation.

2.3.13 Riparian and aquatic habitat, including springs and fens, support well-distributed populations of invertebrate and vertebrate riparian and aquatic dependent wildlife special status species.

2.3.14 Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for wildlife special status species.

2.3.15 Areas identified as critical habitat or proposed critical habitat for special status wildlife species have the characteristics to support sustainable populations, promoting recovery of the species.

2.3.16 The alpine and subalpine willow (*Salix* sp.) dominated riparian areas, providing crucial winter habitat for white-tailed ptarmigan (*Lagopus leucura*) and snowshoe hare (*Lepus americanus*), do not bioaccumulate heavy metals above historically occurring background levels which enter the food chain. Areas of contamination do not become limiting factors for wildlife population sustainability.

2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.

2.3.18 Special status species are able to disperse within the planning area and into adjacent lands. This will allow for the interchange between populations and the maintenance of genetic diversity.

2.3.19 MIS are able to disperse freely across the planning area allowing for the interchange between populations and the maintenance of genetic diversity (SJNF only).

2.3.20 **MIS:** Abert's squirrel (*Sciurus aberti*) - Ponderosa pine habitats provide interconnected structure in mature conifer stands that produce abundant foraging (cone crops and above- and belowground fungi) and reproductive habitat (SJNF only).

2.3.21 **MIS:** American marten (*Martes americana*) - Habitat connectivity for spruce-fir and cool-moist mixed conifer forests is maintained at broad spatial scales. These forests contain a diverse array of structural stages (including mature and old growth) and habitat attributes (snags and downed logs) to provide effective foraging, breeding and dispersal habitat for marten (SJNF only).

2.3.22 **MIS: Elk -** Management activities and human disturbance levels (especially in severe winter range, winter concentration areas, and calving grounds) provide effective habitat capable of meeting state population objectives (SJNF only).

2.3.23 **MIS: Hairy Woodpecker (*Picoides villosus*) -** Snags occur in numbers, size, and quality in and adjacent to aspen, ponderosa pine, and mixed conifer forests to provide effective habitat for foraging and reproduction (SJNF only).

Objectives

2.3.24 Treat 2,000 or more acres of vegetation on TRFO lands and 2,000 or more acres of vegetation on SJNF lands over the life of the LRMP to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area.

2.3.25 Conduct a minimum of six wildlife interpretive and environmental education programs to inform the public on natural resource management, wildlife species, and their habitats, and encourage youth participation and interest in wildlife and natural resources (SJNF only).

2.3.26 **Gunnison Sage-grouse (*Centrocercus minimus*):** improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.

2.3.27 **Nokomis Fritillary Butterfly (*Speyeria nokomis*):** Over the life of the LRMP, restore the hydrologic conditions and plant communities during project implementation at springs or seeps capable of supporting Nokomis fritillary while, at the same time, retaining the water development for livestock or other uses.

2.3.28 **Bats:** Over the life of the LRMP, all mine closures for human safety at sites supporting bat populations include structures (such as bat gates) designed to provide for continued use as bat habitat.

2.3.29 **Inventory and Monitoring:** Improve knowledge on the distribution of wildlife special status species and their habitats by inventorying habitat and species as identified in the LRMP monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.

2.3.30 **Invasives and Disease:** Over the life of the LRMP, coordinate with CPW to prevent introductions or spread of fish or terrestrial wildlife species, as needed, where there is potential for negative impacts on wildlife special status species.

2.3.31 **MIS (SJNF only):** Abert's squirrel - Over the life of the LRMP, restore approximately 3,000 acres of ponderosa pine forest to improve habitat quality as defined in the *Abert's Squirrel Species Assessment San Juan National Forest* (USFS 2004a, 2003).

2.3.32 **MIS (SJNF only):** American marten - Over the life of the LRMP, treat approximately 2,000 acres of spruce-fir and cool-moist mixed conifer forests to increase age class diversity and provide future foraging, breeding and dispersal habitat as defined in the *American Marten Species Assessment San Juan National Forest* (USFS 2004b).

2.3.33 **MIS (SJNF only): Elk -** Over the life of the LRMP, improve approximately 5,000 acres of winter range through mechanical and prescribed burn treatments as defined in the *American Elk Species Assessment San Juan National Forest* (USFS 2004c).

2.3.34 **MIS (SJNF only): Hairy Woodpecker -** Over the life of the LRMP, harvest and regenerate approximately 3,000 acres of aspen forest to increase age class diversity and provide future mature aspen nesting habitat as defined in the *Hairy Woodpecker Species Assessment San Juan National Forest* (USFS 2004d).

Standards

2.3.35 Standards for the golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), and peregrine falcon (*Falco peregrinus*) are listed in Table 2.3.2.

2.3.36 **Predator Control:** On SJNF lands within the planning area, predator control must be managed in cooperation with the state wildlife agencies, the USFWS, Animal Plant Health Inspection Services (APHIS) and other appropriate agencies and cooperators in order to reduce damage to other resources (and to direct control toward removing only the offending animal). Preventive methods of denning, aerial gunning, and poisons of any kind towards predators must not be allowed on SJNF lands within the planning area under any circumstances.

2.3.37 **Bats:** If abandoned mines are closed, surveys will be conducted to determine occupancy. If surveys cannot be completed, occupancy will be assumed and mine closures must allow for bat access. Abandon mines that are determined to be hazardous to bats will be closed to bats.

2.3.38 **Bats:** Human access at occupied caves or abandoned mines will be restricted as necessary during the following periods to maintain essential life cycle processes:

- Maternity sites - April 15 through September 1
- Swarming sites - August 15 through October 15 (30 minutes before sunset to 30 minutes after sunrise)
- Winter hibernacula - October 15 through May 15

2.3.39 **Bighorn Sheep (*Ovis canadensis*):** During project-level planning on domestic sheep (*O. aries*) allotments, management options must be developed to prevent physical contact between domestic sheep and bighorn sheep. Actions may include but are not limited to boundary modification, livestock-type conversion, or allotment closures.

2.3.40 **Bighorn Sheep:** Grazing permit administration in occupied bighorn sheep habitat must utilize measures to prevent physical contact between domestic sheep and bighorn sheep. Permit administration actions may include but are not limited to use of guard dogs, grazing rotation adjustments, or relocation of salting and bed grounds.

2.3.41 **Bighorn Sheep:** Management of recreational pack goats and other domestic goats (*Capra aegagrus hircus*) must utilize measures to prevent physical contact with bighorn sheep.

2.3.42 **Bighorn Sheep:** Domestic goats used for invasive plant control must be veterinarian certified as free of pathogens transmissible to bighorn sheep, except in areas where there is no risk of contact with bighorn sheep.

2.3.43 **Butterflies:** Management actions that could adversely impact occupied habitat used by special status butterfly species for reproduction must be designed to sustain host plant species.

2.3.44 **Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*):** New noise sources resulting from management activities must not contribute to noise levels that negatively impact sharp-tailed grouse leks during the active lek season (March 1 to June 30) based on best available science

2.3.45 **Gunnison Sage-grouse:** Management activities must not occur from March 1 to June 30 within occupied habitat suitable for nesting to allow for breeding and December 1 to March 15 for known winter habitat.

2.3.46 **Gunnison Sage-grouse:** New structural improvements or surface disturbance must not occur within known winter concentration area or within a 0.6-mile radius of known Gunnison sage-grouse leks.

2.3.47 **Gunnison Sage-grouse:** In occupied habitat fuels treatments must be designed and implemented with an emphasis on protecting and enhancing existing sagebrush ecosystems

2.3.48 **Gunnison Sage-grouse:** Invasive vegetation must be monitored and controlled post-treatment.

Guidelines

2.3.49 Guidelines for the golden eagle, bald eagle, osprey (*Pandion haliaetus*), peregrine falcon, northern goshawk (*Accipiter gentilis*), burrowing owl (*Athene cunicularia*), and all other accipiter, buteo, falcon, harrier, and owl species are listed in Table 2.3.2.

2.3.50 In order to determine site occupation, pre-implementation surveys may be required for projects occurring in habitats that may support populations of sensitive species and species listed or proposed under the ESA, as determined by an agency biologist.

2.3.51 **Bats:** Human access should be managed at caves and abandoned mines where known bat populations exist to protect bat habitat from disturbance and/or the introduction of pathogens. Management examples include, but are not limited to, seasonal or permanent closures and excluding humans by installing bat gates.

2.3.52 **Bats:** Where known bat concentrations of significant conservation concern are located outside caves or abandoned mines (such as in bridges structures, rock crevasse, or tree snags), human disturbance should be managed in order to protect those populations and the concentration site's physical features.

2.3.53 **Bats:** On the SJNF, formal mineral withdrawal of abandoned mines for conservation of special status bat species should be pursued when demonstrated necessary to prevent loss of effective or crucial habitat due to mining activity.

2.3.54 **Bats:** At swarming sites, hibernacula, and maternity sites, activities that may alter the suitability of the cave or abandoned mine for bat occupation should not occur within 500 feet of the entrance, unless to rehabilitate the suitability of the site or install mine safety closures.

2.3.55 **Migratory Birds:** Projects or activities should consider and undertake proactive bird conservation actions as practicable particularly during breeding season to maintain or improve habitat needs over the long-term for species identified by each agency as priority for conservation action.

2.3.56 The drainage of acid-mine runoff through alpine and subalpine willow-dominated riparian areas that provide crucial winter habitat for white-tailed ptarmigan and snowshoe hare should be avoided in order to prevent physiological impacts from the effects of bioaccumulation of heavy metals.

2.3.57 **Pollinators:** Pollinators should be considered during the application of pesticides to prevent population-level impacts and maintain pollinator function in the ecosystem.

2.3.58 New structural improvements, reconstruction, and operations should be designed to provide for wildlife movement to sustain populations.

2.3.59 Projects or activities that adversely impact pronghorn (*Antilocapra americana*) and elk production areas should be limited or avoided. This will keep reproductive success from being negatively impacted from management activities by using access restrictions during the following periods:

- Pronghorn: May 1–July 1
- Elk: May 15–June 30

2.3.60 Management activities and access should be limited or avoided in critical winter range, severe winter range, and winter concentration areas for pronghorn, elk, and mule deer during the following times to keep survival and reproduction from being negatively impacted (see Figures 2.3.1, 2.3.2, and 2.3.5):

- Pronghorn: December 1–April 30
- Elk: December 1–April 30
- Mule deer: December 1–April 30

2.3.61 Severe and critical big game winter range and winter concentration areas: In Animas City Mountain and Grandview Ridge, conditions-based winter wildlife closures should be implemented in order to protect critical and severe winter range and winter concentrations areas for elk and mule deer. This includes Animas and Grandview recreation areas. These closures may be implemented at any time between December 1 and April 30. The closures should be based on existing snow conditions and/or the level of wildlife use for the given area. The specific conditions that will trigger a closure or that will allow the BLM to open the Cortez or Durango Special Recreation Management Areas (SRMA) will be based on snow conditions of 16 inches. Parameters for re-opening will be based on 1) general assessment of the north facing slope, such as absence of snow; 2) weather/snow condition in the general surrounding area; 3) presence of big game at higher elevations; and 4) coordination with CPW.

2.3.62 **Ungulates:** Projects or activities in big game critical winter range, winter concentration areas, severe winter range, production areas, and important migration corridors should be designed and conducted in a manner that preserves and does not reduce habitat effectiveness within those mapped areas.

2.3.63 **Ungulates:** In order to provide for healthy ungulate populations capable of meeting state population objectives, anthropomorphic activity and improvements across the planning area should be designed to maintain and continue to provide effective habitat components that support critical life functions. This includes components of size and quality on the landscape providing connectivity to seasonal habitats (wildlife travel corridors), production areas, critical winter range, severe winter range, and winter concentration areas, along with other habitat components necessary to support herd viability.

2.3.64 **Bighorn Sheep:** Projects or activities that adversely impact bighorn sheep production areas by reducing habitat effectiveness should be limited or avoided, using access restrictions during the following periods (see Figure 2.3.3):

- Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*): April 15–June 30
- Desert bighorn sheep (*O.c. nelsoni*): February 1–May 1

2.3.65 **Bighorn Sheep:** Projects or activities that adversely impact bighorn sheep severe winter range and winter concentration areas by reducing habitat effectiveness should be limited or avoided using access restrictions during the following periods:

- Rocky Mountain bighorn sheep: November 1–April 15
- Desert bighorn sheep: December 1–April 15

2.3.66 **Wildlife Corridors:** Public ownership of important wildlife movement corridors should be maintained. Priority areas are those adjacent to public highways or where public lands are identified as a key component in maintaining the integrity of seasonal movements by wildlife in an otherwise restricted landscape.

2.3.67 **Columbian Sharp-tailed Grouse:** Surveys for new/unknown Columbian sharp-tailed grouse leks within occupied Columbian sharp-tailed grouse habitat should be completed prior to project approval in order to determine if additional management actions to provide for habitat effectiveness are necessary.

2.3.68 **Columbian Sharp-tailed Grouse:** Management activities that adversely impact critical life functions should not occur from March 15 to July 30 within a 1.25-mile radius of mapped occupied Columbian sharp-tailed grouse leks to allow for breeding and December 1 to March 15 for known winter habitat to provide for effective winter habitat to support populations on the landscape.

2.3.69 **Columbian Sharp-tailed Grouse:** No new structural improvements or surface disturbance should occur within known winter habitat or within a 0.4-mile radius of known Columbian sharp-tailed grouse leks to maintain effective habitat for critical life functions.

Gunnison Sage-grouse

2.3.70 Structures in sage-grouse habitat should be constructed to limit risk of collision and predation

2.3.71 New noise sources resulting from management activities should not contribute to noise levels that negatively impact sage-grouse leks during the active lek season (March 1 to June 30) based on best available science.

2.3.72 Projects in occupied Gunnison sage-grouse habitat should be designed to mitigate or avoid the direct or indirect loss of habitat necessary for maintenance of the local population or reduce to acceptable levels the direct or indirect loss of important habitat necessary for sustainable local populations. Projects will incorporate special reclamation measures or design features that accelerate recovery and/or re-establishment of affected sage-grouse habitat as much as possible.

2.3.73 Applicable BMPs should be applied to all mineral proposals as Conditions of Approval within occupied sage-grouse habitat to provide for adequate effective habitat and breeding, nesting, and wintering habitat.

2.3.74 Remote methodologies for monitoring, transporting fluids to centralized collection tanks, etc., should be utilized to minimize human disturbance in Gunnison sage-grouse habitat.

2.3.75 Fuels treatments should be designed to meet strategic protection of identified occupied sage-grouse habitat.

2.3.76 Use of native seeds should be used for revegetation following fuels management treatment based on availability, adaptation (site potential), and probability of success (Richards et al. 1998). Where probability of success or native seed availability is low, non-native seeds may be used as long as they meet sage-grouse habitat objectives

2.3.77 Within occupied Gunnison sage-grouse critical habitat the RCP grazing guidelines should be incorporated when appropriate.

2.3.78 Within occupied habitat, grazing in treatment areas should be deferred for 2 growing season after treatment, unless needed for seedbed preparation or desired understory and overstory are established.

2.3.79 When developing or modifying water developments, BMPs (see Volume III, Appendix N) should be used to mitigate potential impacts from West Nile virus on sage-grouse within occupied habitat.

Table 2.3.2: Raptor Timing and Buffer Zone Distance Standards and Guidelines

Species	Impact/Risk	Time Frame	Buffer Distance****	Source
Golden eagle	Structural improvements*	Year-round	New structures must not occur within a 0.5-mile radius of an active nest. (S)***	CPW 2008
	Disturbance**	December 15–July 15	Human encroachment should not occur within 0.5 mile of an active nest during the nesting season. (G) ***	CPW 2008
Bald eagle	Structural improvements*	Year round	New structures must not occur within a 0.5-mile radius of an active nest. (S)***	SJNF and TRFO
	Disturbance**	November 15–July 15	Human encroachment should not occur within 0.5 mile of an active nest during the nesting season. (G)***	SJNF and TRFO

Species	Impact/Risk	Time Frame	Buffer Distance****	Source
Bald eagle winter roost	Structural improvements*	Year round	New structures must not occur within 0.5 mile of a communal roost site. (S)	SJNF and TRFO
	Disturbance**	November 15 –March 15	Human encroachment should not occur within a 0.25-mile radius (indirect line of sight) or a 0.5-mile radius (direct line of sight) of a communal winter roost site (as identified by CPW and the managing agency biologist). (G) Limit activity between 10 a.m. and 2 p.m. if encroachment will occur within buffer zones. (G)	CPW 2008
Osprey	Disturbance**	April 1– August 31	Human encroachment should not occur within 0.25 mile of a nest during the nesting season. (G)	SJNF and TRFO
	Structural Improvements*	Year-round	New structures should not occur within a 0.25-mile radius of an active nest. (G)	CPW 2008
Peregrine falcon	Structural Improvements*	Year-round	New structures must not occur within a 0.5-mile radius of an active cliff nest complex. (S)	CPW 2008
	Disturbance**	March 15– July 31	Human encroachment should not occur within 0.5 mile of a nest during the nesting season. (G)	CPW 2008
Northern goshawk	Disturbance**	March 1– August 31	Human encroachment should not occur within 0.5 mile of a nest during the nesting season. (G)	SJNF and TRFO
	Structural Improvements*	Year-round	New structures should not occur within a 0.5-mile radius of an active nest. (G)	CPW 2008
Burrowing owl	Disturbance**	March 15– August 15	Human encroachment should not occur within 0.25 mile of nest burrows when owls may be present during the nesting season. (G)	Romin and Muck 2002
	Structural Improvements*	Year-round	New structures should not occur within a 0.25-mile radius of active nests or within occupied habitat. (G)	Romin and Muck 2002
All other raptors	Disturbance**	Varies by species	Determination of the application of these specific seasonal restrictions, timing limitations, and/or buffer distances should be made by the project biologist, guided by agency requirements, along with professional knowledge and experience. They will be considered on a case-by-case basis, taking into consideration site-specific factors such as topography, vegetation, species of raptor, historic patterns of human activity and infrastructure, and observed behaviors of individual birds. (G)	Romin and Muck 2002

Species	Impact/Risk	Time Frame	Buffer Distance****	Source
	Structural Improvements*	Varies by species	Determination of the application of these specific seasonal restrictions, timing limitations, and/or buffer distances should be made by the project biologist, guided by agency requirements, along with professional knowledge and experience. They will be considered on a case-by-case basis, taking into consideration site-specific factors such as topography, vegetation, species of raptor, historic patterns of human activity and infrastructure, and observed behaviors of individual birds. (G)	Romin and Muck 2002

*Structures include improvements such as roads, trails, radio towers, power lines, aboveground transmission corridors, and wells as proposed following nest establishment. This is not intended to include structures that historically occurred in the area prior to nest establishment.

**This does not apply to historic levels and patterns of disturbance under which the nest was established and is intended to apply to additional levels and change in disturbance patterns.

***Golden and bald eagle nest as defined under the Bald and Golden Eagle Protection Act.

****Buffer distances for some species may vary based on site-specific information, current science, and agency wildlife biologists' professional judgment. Area closures may be considered where appropriate.

Note: (S) = Standard; (G) = Guideline.

Table information is based on a variety of sources, including 2008 Colorado Parks and Wildlife raptor guidelines, Romin and Muck (2002), professional knowledge of local area conditions, Reynolds et al.'s (1992) recommendations specific to the SJNF, and Bald and Golden Eagle Protection Act conformance

Where literature and other evidence shows, exceptions may occur when individuals are adapted to human activity. Management is designed to reduce impacts during sensitive periods.

Additional Guidance

Terrestrial Wildlife

- ESA
- FSM 2600, Wildlife, Fish and Sensitive Plant Habitat Management
- FSH 2609-13, Wildlife and Fisheries Program Management
- FSM 2550, Soil Management
- FSM 5150, Fuel Management
- FSH 2509-18, Soil Management
- FSH 2509-25, Watershed Conservation Practices Handbook (Region 2 Supplement)
- Colorado's Comprehensive Wildlife Conservation Strategy (Colorado Division of Wildlife 2006) (see Volume III, Appendix H for details on wildlife guidance in relation to leasable minerals)
- Managing Forested Lands for Wildlife (Hoover and Wills 1984)

Special Status Species

- FSM 2600, Wildlife, Fish, and Sensitive Plant Habitat Management
- Colorado's Comprehensive Wildlife Conservation Strategy (2005)
- A Process for Finding Management Solutions to the Incompatibility Between Domestic and Bighorn Sheep (Schommer and Woolever 2001)
- Colorado Desert Bighorn Sheep Management Plan (CPW and BLM 1989)
- Colorado Bighorn Sheep Management Plan 2009-2019 (George et al. 2009)
- Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat (Wild Sheep Working Group, Western Association of Fish and Wildlife Agencies 2012)

- BLM Manual 6840, Special Status Species Management (as revised, December 2008)
- San Juan National Forest Plan Amendment #15 and associated Decision Notice for animal damage control (USFS 1992c)

Bats

- Federal Cave Resources Protection Act of 1988
- Colorado Bat Conservation Plan (Ellison et al. 2003)
- Townsend's Big-eared Bat (*Corynorhinus townsendii*): A Technical Conservation Assessment (Gruver et al. 2006)
- The Fringed Myotis: A Technical Conservation Assessment (Keinath 2004)

Migratory Birds

- The Migratory Bird Treaty Act of 1918
- The Migratory Bird Conservation Act of 1929
- the Neotropical Migratory Bird Conservation Act of 2000
- EO 13186, 2001
- USFWS Birds of Conservation Concern (2002a)
- Colorado Partners in Flight Land Bird Conservation Plan (2000)
- Partners In Flight North American Landbird Conservation Plan (Rich et al. 2004)
- U.S. Shorebird Conservation Plan (2nd ed.) (USFWS 2001a)
- Waterbird Conservation Plan for the Americas: The North American Waterbird Conservation Plan (Version 1) (Kushlan et al. 2002)
- Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment (Hayward and Verner 1994)
- USFS and USFWS MOU to Promote the Conservation of Migratory Birds, Agreement # 08-MU-1113-2400-246 (USFS and USFWS 2008)
- BLM Instruction Memorandum (IM) No. CO-2011-07 Migratory Bird Treaty Act – Interim Management Guidance (expires September 30, 2012) (BLM 2011a)

Threatened and Endangered Species

- Final Southwestern Willow Flycatcher Recovery Plan (USFWS 2002b)
- Mexican Spotted Owl Recovery Plan (USFWS 2012a)
- Uncompahgre Fritillary Butterfly Recovery Plan (USFWS 1994)
- Annual Uncompahgre fritillary butterfly monitoring and inventory field report and status updates (USFWS 2013a)
- Final Designation of Critical Habitat for the Mexican Spotted Owl: Final Rule (USFWS 2004)
- Canada lynx conservation agreement (USFS and USFWS (2000)
- Lynx Conservation Assessment and Strategy (Ruediger et al. 2000)
- Southern Rockies Lynx Amendment (USFS 2008)
- October 23, 2012, letter regarding guidance on Section 7 consultation procedures for the southwestern willow flycatcher, USFWS concurrence to the SJNF, December 12, 2012 (USFWS 2012b)
- Southwestern willow flycatcher guidance letter from USFWS to TRFO (USFWS 2012c)

Butterflies and Pollinators

- USFS and North American Butterfly Association MOU, USFS Agreement # 08-SU-1113-241-298 (2008)
- BLM and the Coevolution Institute MOU WO-230-2007-005 (2007)
- USFS and the Xerces Society, USFS Agreement No 09-SU-11130121-091 (2009)

Predator Control

- BLM IM No. CO-2000, Animal Damage Control Activities (BLM 2000)
- Master MOU between the BLM and APHIS Wildlife Service (1995)
- Colorado State level MOU between the Colorado Department of Natural Resources, the CPW, the BLM, the USFS, the Contractors State License Board (CSLB), and the APHIS Wildlife Service (1999)
- San Juan National Forest Plan Amendment #15, and associated Decision Notice for Animal Damage Control (USFS 1992c)
- Master MOU between the USFS and the APHIS Wildlife Service (1998)

Raptors

- Bald and Golden Eagle Protection Act of 1940
- Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors (CPW 2008)
- Reducing Avian Collisions with Power Lines: State of the Art in 2012 (Edison Electric Institute and Avian Power Line Interaction Committee)

Gunnison Sage-grouse

- Conservation Plan Agreement to participate in the LRMP, signed by the Region 2 Regional Forester (April 28, 2005) and the BLM State Director (April 29, 2005), IM No. CO-2010-28 provides direction for sage-grouse (USFS and BLM 2005)
- Gunnison Sage-grouse Rangewide Conservation Plan (Gunnison Sage-grouse Rangewide Steering Committee 2005)
- A Report on National Greater Sage-Grouse, Conservation Measures, produced by the Sage-grouse National Technical Team (December 21, 2011) (BLM 2011b)

Ungulates

- FSM 2600, Wildlife, Fish, and Sensitive Plant Habitat Management
- FSH 2609.13, Wildlife and Fisheries Program Management Handbook
- Managing Forested Lands for Wildlife (Hoover and Wills 1984)
- Hermosa Deer Management Plan: Data Analysis Unit D-52 (CPW 2001a)
- San Juan Deer Management Plan: Data Analysis Unit D-30 (CPW 2001b)

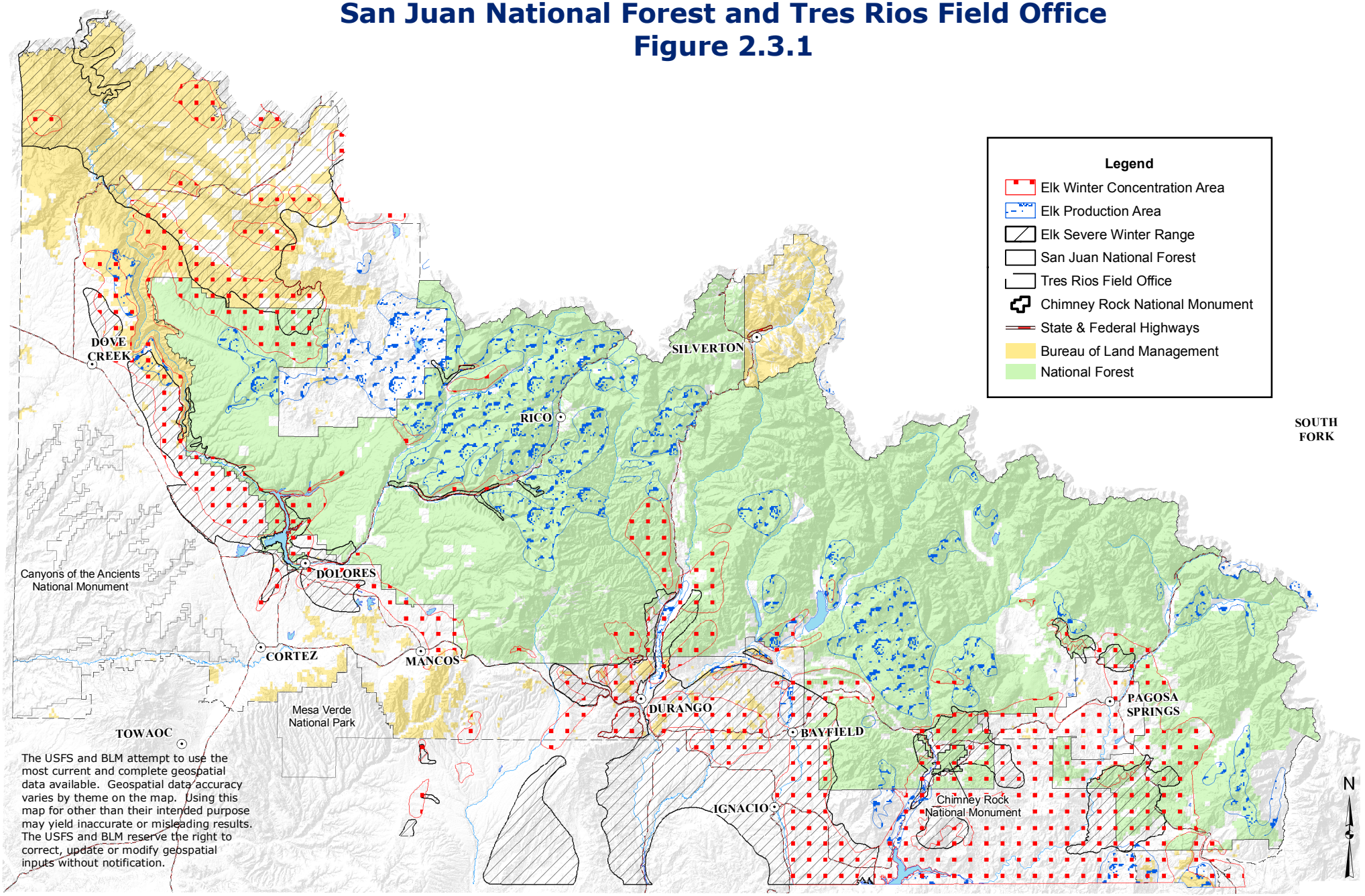
Wildlife Corridors

- Linking Colorado's Landscapes, Phase II Reports (Southern Rockies Ecosystem Project 2006)
- Lynx Linkages Areas discussed in the USFS 2001 Programmatic Consultation Agreement for Canada Lynx in Colorado (USFS 2001a)

Elk Severe Winter Range, Winter Concentration Areas and Production Areas

San Juan National Forest and Tres Rios Field Office

Figure 2.3.1



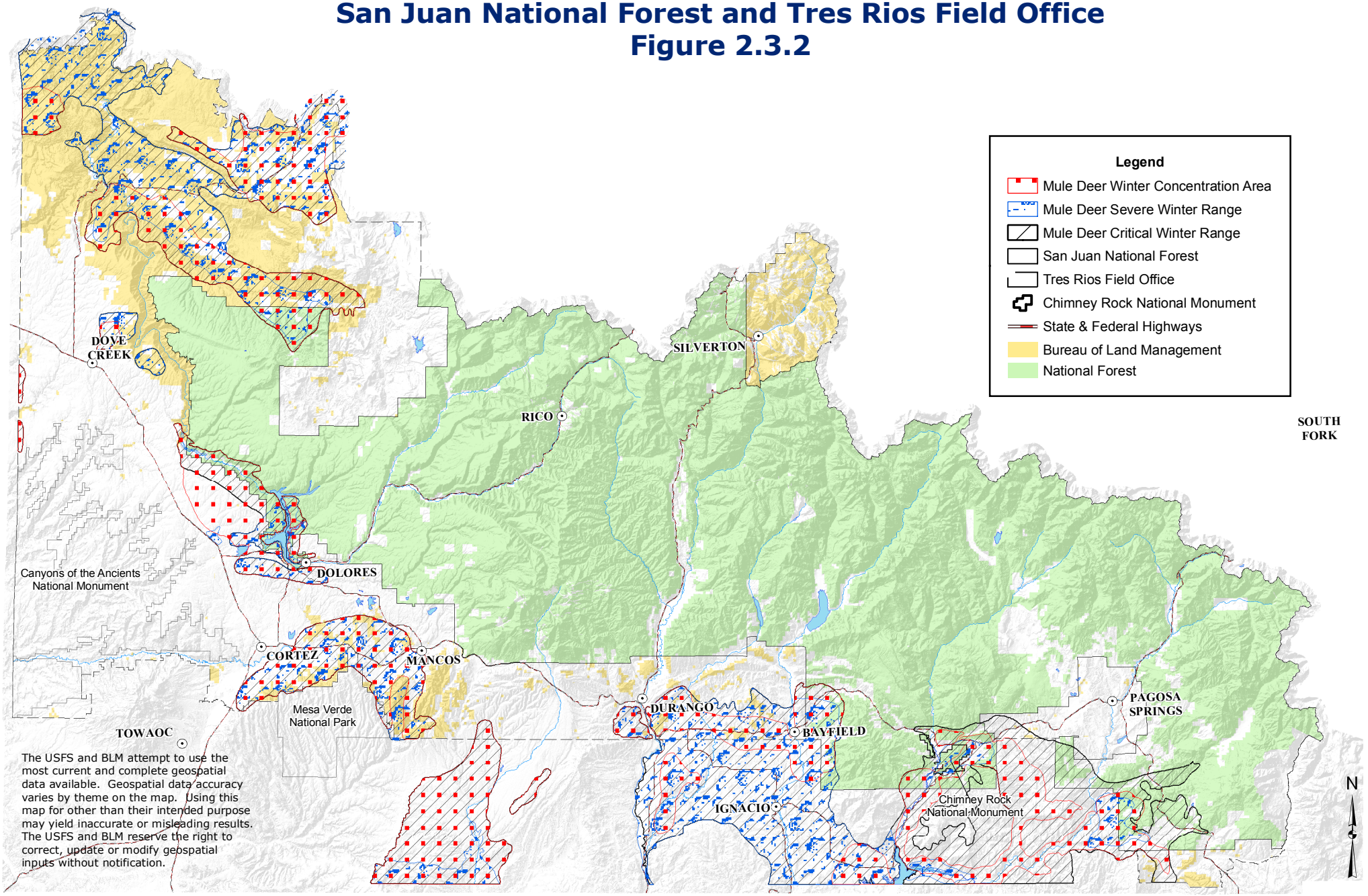
The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
May 28, 2013

Mule Deer Severe Winter Range, Winter Concentration Areas and Production Areas

San Juan National Forest and Tres Rios Field Office

Figure 2.3.2


Legend
Mule Deer Winter Concentration Area
Mule Deer Severe Winter Range
Mule Deer Critical Winter Range
San Juan National Forest
Tres Rios Field Office
Chimney Rock National Monument
State & Federal Highways
Bureau of Land Management
National Forest
DOVE CREEK
SILVERTON
RICO
SOUTH FORK
Canyons of the Ancients National Monument
DOLORES
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
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May 28, 2013

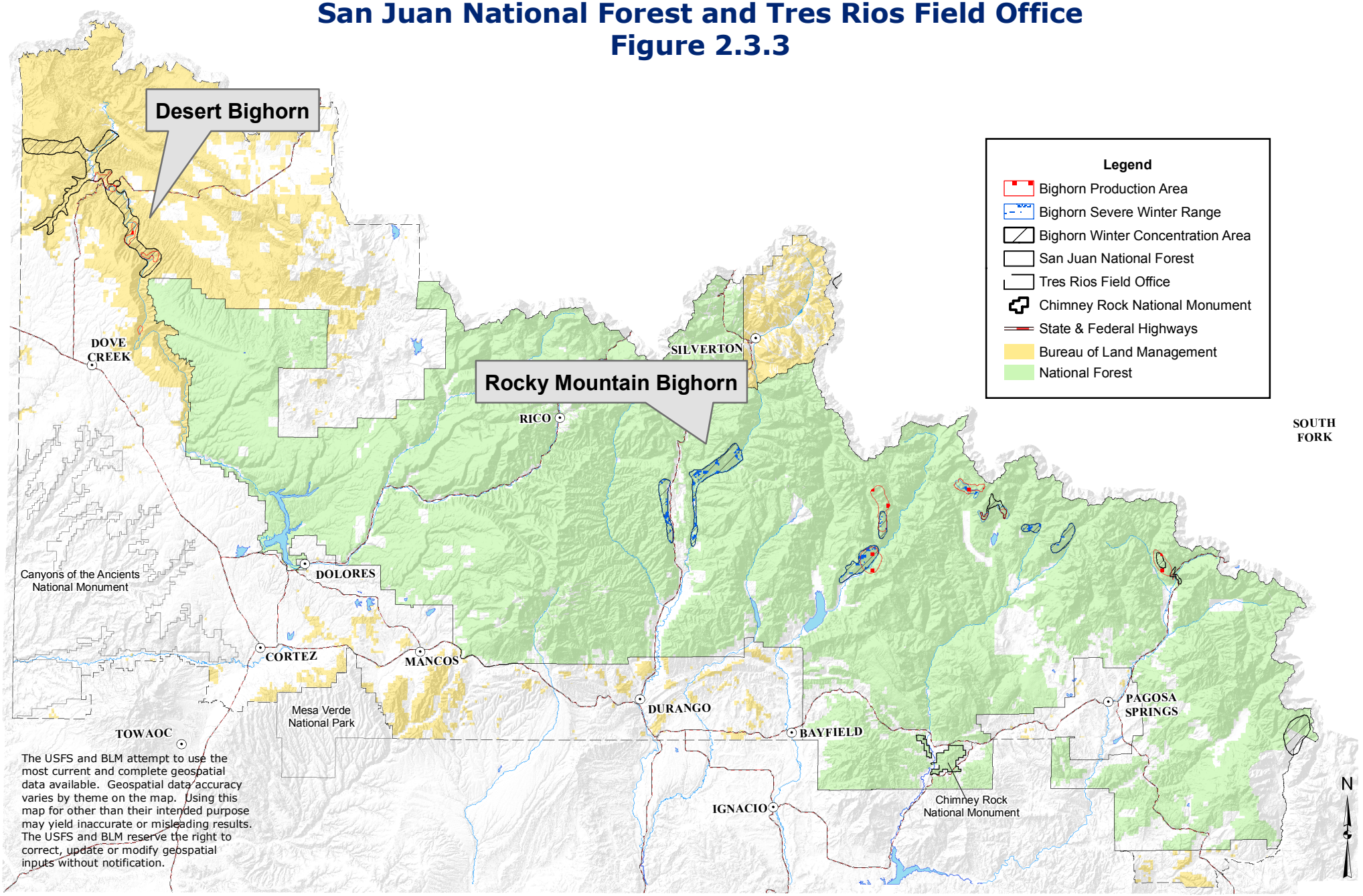
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Bighorn Sheep Severe Winter Range, Winter Concentration Areas and Production Areas

San Juan National Forest and Tres Rios Field Office

Figure 2.3.3



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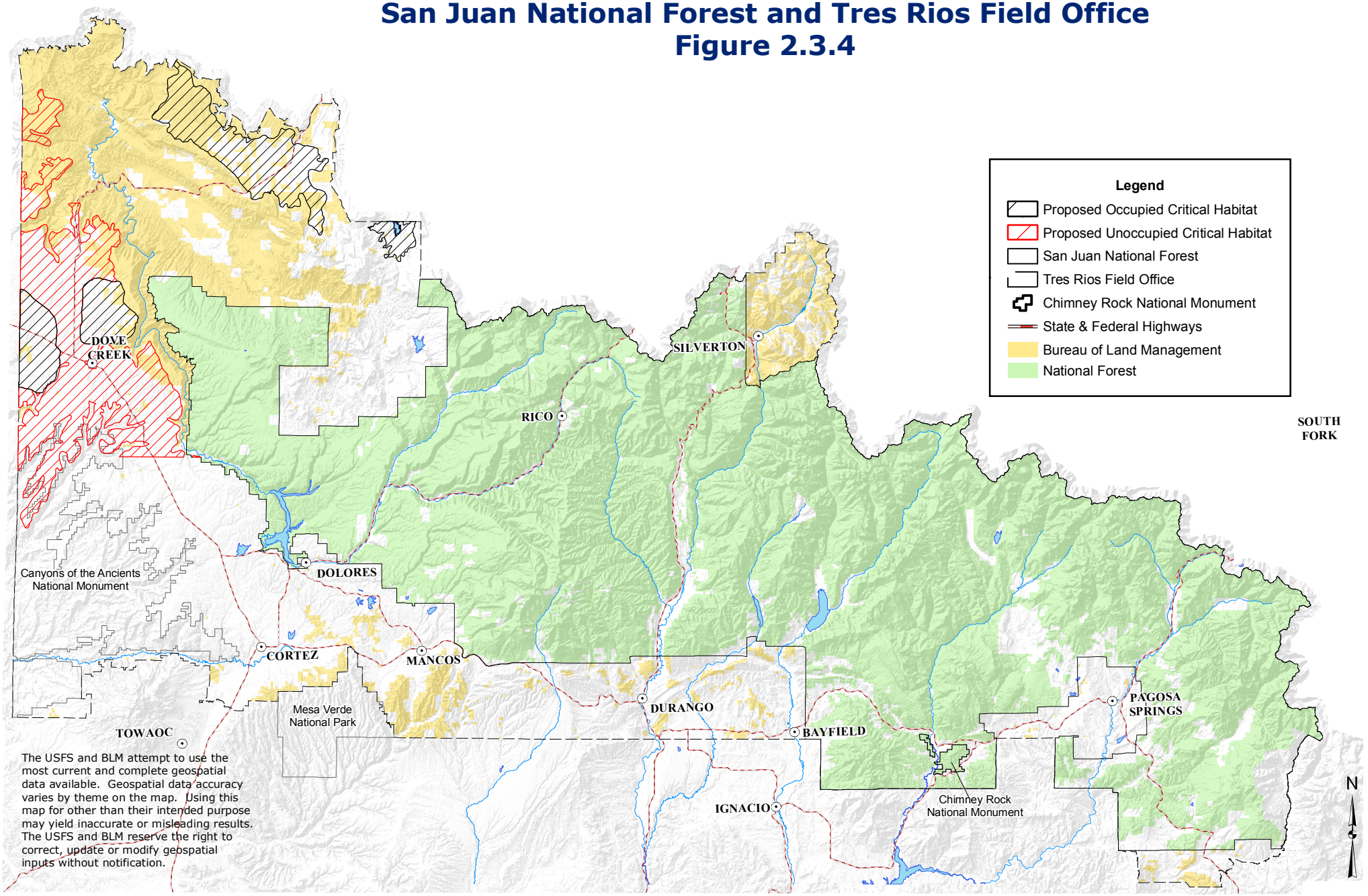
May 28, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Gunnison Sage Grouse
Proposed Occupied and Unoccupied Critical Habitat
San Juan National Forest and Tres Rios Field Office
Figure 2.3.4



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May 28, 2013

0 10 20 40 Miles

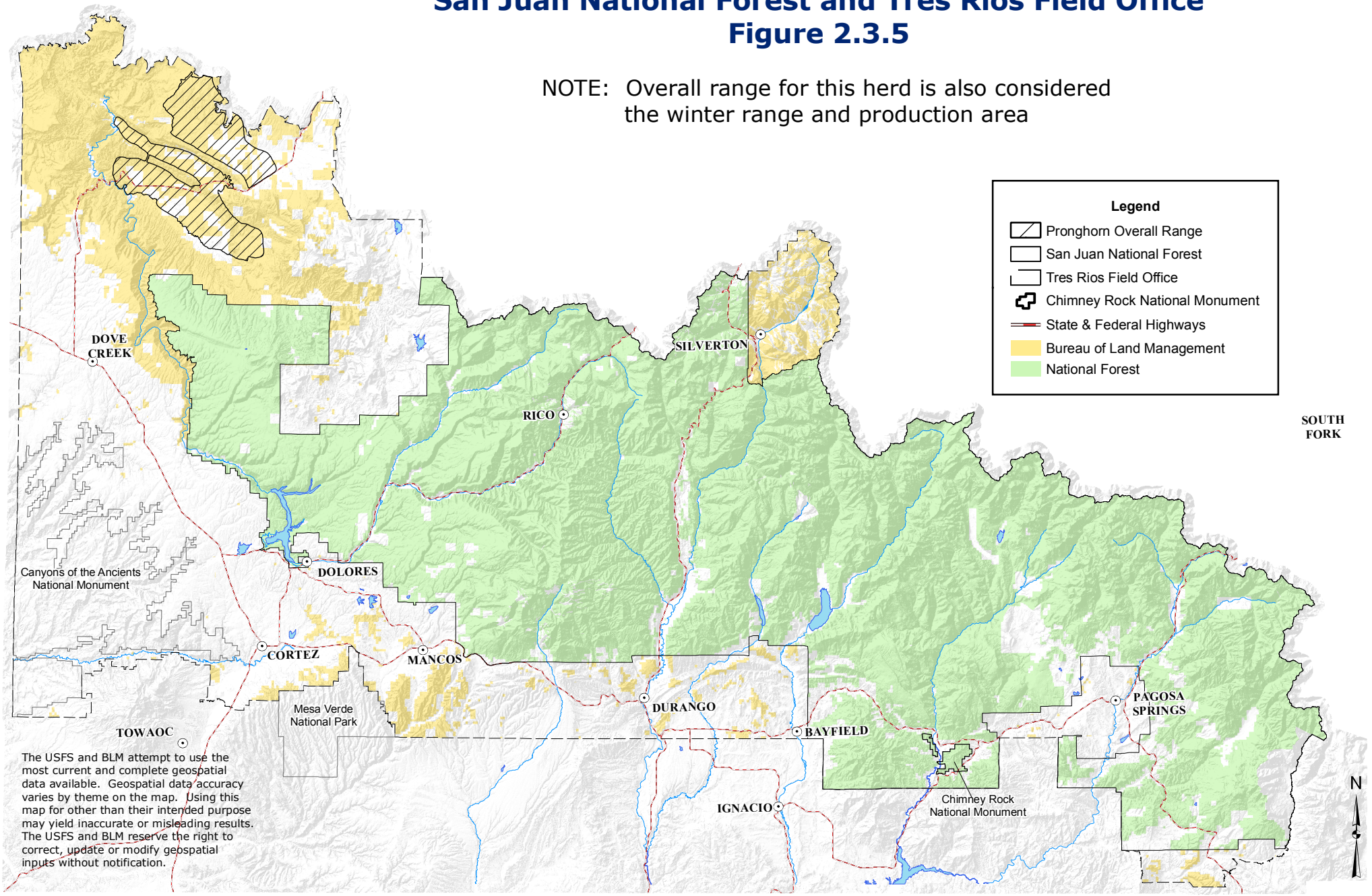
San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Pronghorn Overall Range

San Juan National Forest and Tres Rios Field Office

Figure 2.3.5

NOTE: Overall range for this herd is also considered the winter range and production area



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
May 28, 2013

0 10 20 40 Miles

2.4 Riparian Area and Wetland Ecosystems

Introduction

Riparian area and wetland ecosystems on SJNF and TRFO lands occur on valley floors and other low-lying landscape positions where the water table is usually at or near the land surface. They are frequently flooded or at least seasonally saturated by a fluctuating water table, and they depend on water derived from direct precipitation and upland sources. Riparian area and wetland ecosystems have soils that are somewhat poorly to very poorly drained and hydrophytic plants that are obligate-wetland or facultative-wet species (Reed 1988). These ecosystems, which are primarily associated with perennial streams on SJNF lands and perennial and intermittent streams on TRFO lands, store water, enhance water quality, provide habitat for wildlife and plants, and provide recreation and aesthetic values. Natural ecological processes and disturbances including fire, drought, wind, floods, flow regimes, and succession play a fundamental role in shaping the composition, structure, and function of riparian area and wetland ecosystems on the SJNF and TRFO.

Although they are small in extent, riparian area and wetland ecosystems represent a very important ecological component of the SJNF and TRFO. Riparian zones of the Southwest contain the greatest diversity of native vegetation communities, birds, fish, and terrestrial vertebrates (Durkin et al. 1995; Hink and Ohmart 1984; Howe and Knopf 1991; Siegel and Brock 1990). Riparian area and wetland ecosystems on SJNF and TRFO lands include a general type and four physiognomic types. The general riparian area and wetland ecosystem type is defined by its soils, topographic position, and the riparian area and wetland major vegetation type (Redders 2012). Ecosystem physiognomic types, which are defined by their soils and the dominant life form in the uppermost canopy layer, include evergreen riparian forests, deciduous riparian forests, deciduous riparian shrublands, and riparian area and wetland herbaceous lands (which include fens and hanging gardens).

These ecosystems are an important part of the LRMP's sustainable ecosystems strategy. This strategy includes maintaining or restoring the diversity and ecological integrity of ecosystems on SJNF and TRFO lands, which in turn will protect the diversity and population viability of the majority of plant and animal species within the ecosystems. See Section 2.1 in the LRMP for more information on ecosystems and the sustainable ecosystems strategy.

Riparian area and wetland ecosystems types are used in the LRMP and FEIS to describe ecosystem diversity; analyze past, current, and future ecological conditions; describe environmental impacts from management activities; and develop of LRMP components (desired conditions, objectives, standards, and guidelines). The general riparian area and wetland ecosystem type also serves as a broad-scale habitat type for terrestrial wildlife species, special status wildlife species, MIS, and plant species, and as such, provides habitat conditions that maintain species diversity and population viability for most terrestrial wildlife and plant species. Riparian area and wetland ecosystems will be monitored to determine if management activities are adversely affecting those ecosystems and the composition, abundance, distribution, and population viability of the plant and animal species that rely on those ecosystems for their habitat needs.

Certain high-elevation riparian and wetland ecosystems such as evergreen riparian forests, deciduous riparian shrublands, and herbaceous riparian areas and wetlands (including fens) are well represented in protected areas on the SJNF. Mid-elevation riparian area and wetland ecosystems such as deciduous riparian forests and shrublands, and herbaceous riparian areas and wetlands are also well represented in protected areas. The ecosystems in these areas are primarily impacted by recreation use and livestock grazing, which have caused changes in species abundance and composition in localized areas such as popular camping areas and stock watering locations. Water diversions have also impacted certain riparian areas and wetlands in protected areas.

Outside protected areas, management activities such as road construction, livestock grazing, water diversions, the construction of dams and reservoirs, timber harvest, mechanical fuels treatments, oil and gas development, recreation, utility corridor construction, and solid minerals development have caused

impacts to the soils and vegetation of riparian area and wetland ecosystems on the SJNF and TRFO. In the ecosystems impacted by these activities, there have been both direct and indirect changes in species abundance and composition, including a reduction of willows and cottonwood (*Populus* sp.) trees in deciduous riparian forests, a reduction of willows in deciduous riparian shrublands, and a reduction of sedges (*Carex* sp.) and rushes (*Juncus* sp.) in riparian herbaceous lands. Kentucky bluegrass (*Poa pratensis*; an exotic invasive grass) has replaced native sedges and rushes in many riparian area and wetland ecosystems impacted by historic unmanaged livestock grazing. Tamarisk (*Tamarix* sp.; an exotic invasive shrub that was originally planted to help stabilize stream banks) is also found in many riparian area and wetland ecosystems at the lower elevations of TRFO lands where it competes with native cottonwoods and willows.

Riparian area and wetland ecosystem management on SJNF and TRFO lands includes maintaining or restoring the composition, structure, and function of these ecosystems; maintaining adequate vegetation cover; maintaining soil productivity; protecting water quality and aquatic habitats; and preventing or minimizing adverse impacts from management actions. Management also includes developing ecosystem classification systems, conducting riparian area and wetland inventories, monitoring, identifying plants and plant communities, using the best available science, and determining the condition of riparian area and wetland ecosystems.

Desired Conditions

2.4.1 Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.

2.4.2 Riparian area and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development.

2.4.3 Forest and shrubland types display hydrophytic trees and shrubs in a variety of size classes; they provide terrestrial and aquatic habitats, stream shading, woody channel debris, aesthetic values, and other ecosystem functions.

2.4.4 Woody debris in a variety of sizes is present in forest and shrubland riparian area and wetland ecosystem types.

2.4.5 Riparian area and wetland ecosystems are resilient to change from disturbances (including from floods, fire, and drought) and offer resistance and resilience to changes in climate.

2.4.6 Riparian area and wetland ecosystems have flow regimes and flooding processes that contribute to stream-channel and floodplain development, maintenance, and function, and facilitate the regeneration of native hydrophytic plants (including narrowleaf cottonwood [*Populus angustifolia*] and Rio Grande cottonwood [*P. deltoides* ssp. *wislizeni*]) that depend on flooding for regeneration.

2.4.7 The composition, structure, and function of fens and hanging gardens are intact (including their native plant species, organic soils, and hydrology).

2.4.8 Riparian area and wetland ecosystems that contain plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks are protected, have habitat to expand into, and have the water quantity and hydrologic systems necessary in order to support and sustain these communities.

2.4.9 Soil productivity is intact on all riparian area and wetland ecosystems on the SJNF and TRFO.

2.4.10 Long-term levels of soil organic matter and soil nutrients are maintained at acceptable levels on all riparian area and wetland ecosystems of the SJNF and TRFO.

2.4.11 Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion on all riparian area and wetland ecosystems of the SJNF and TRFO.

2.4.12 Long term impacts to soils (e.g., soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils) from management actions are rare on all riparian area and wetland ecosystems of the SJNF and TRFO.

Objectives

2.4.13 Within 10 years, restore the ecological integrity of four deciduous riparian shrubland sites (two on SJNF and two on TRFO lands) that currently classify as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.

2.4.14 Within 10 years, determine the functional condition of 40 miles (25 miles on TRFO and 15 miles on SJNF lands) of riparian area and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998).

2.4.15 Within 15 years, treat three fens on TRFO lands and two fens on SJNF lands with impaired functions.

2.4.16 Within 5 years, eradicate tamarisk and Russian olive (*Elaeagnus angustifolia*) on two stream reaches or two seeps/springs on TRFO lands, and if needed conduct follow-up treatment to prevent the establishment or spread of other invasive species.

2.4.17 Maintain native riparian and upland ecosystems that have been treated to control non-native species on a minimum of 50 miles of TRFO stream reaches over the next 20 years.

2.4.18 Maintain or restore native riparian ecosystems and connected uplands that have been treated to control non-native species on a minimum of 50 miles on the Dolores River and its tributaries on TRFO lands over the next 20 years.

Standards

2.4.19 Long term adverse effects to the hydrology, soils, and vegetation of fens and hanging gardens from management activities in or adjacent to them (including motorized travel, road construction, water pumping, and peat removal) must not occur.

2.4.20 Agency actions in protected areas must not adversely affect the long-term ecological integrity of the riparian area and wetland ecosystems within them.

2.4.21 Management actions must not cause long-term change away from desired conditions in riparian or wetland vegetation communities.

Guidelines

2.4.22 Agency actions should avoid or otherwise mitigate long-term adverse impacts to riparian areas and wetlands.

2.4.23 Agency actions should avoid or otherwise mitigate long-term adverse impacts in riparian area and wetland ecosystems that have plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks, including wild privet (*Forestiera pubescens*) shrublands and boxelder/river birch (*Acer negundo/Betula fontinalis*) woodlands, in order to maintain the ecological integrity of those rare plant communities.

2.4.24 Agency actions should avoid or otherwise mitigate damage to the long-term soil productivity of riparian area and wetland ecosystems.

2.4.25 Livestock browsing should not remove more than 25% of the annual leader growth of hydrophytic shrubs and trees.

2.4.26 Agency actions should avoid or otherwise mitigate adverse impacts to the abundance and distribution of willows to maintain or improve the ecological integrity of riparian area and wetland ecosystems.

2.4.27 Certified, weed-free native seed mixes of local ecotypes should be used to revegetate riparian area and wetland ecosystems where commercially available. Non-native, non-invasive plant material may be used in limited situations where considered necessary in order to protect resources and/or stabilize soils in a timely fashion. Persistent non-natives or invasive exotic plant species should be avoided.

2.4.28 Woody riparian vegetation along low-gradient ephemeral and permanent stream channels should be maintained or restored to ensure terrestrial food sources for invertebrates, fish, birds, and mammals, and to minimize water temperature changes.

Additional Guidance

The principal guidelines used to protect all riparian areas and wetlands on SJNF lands are found in the Region 2 Watershed Conservation Practices Handbook (Region 2 FSH 2509.25-2006-1). This handbook contains guidelines that prevent adverse impacts, maintain or improve stream health, preserve ecosystem function, prevent stream sedimentation, and reclaim disturbed sites. Additional guidance includes:

- Colorado River Basin Salinity Control Act of 1974
- Clean Water Act of 1977
- EOs 11288, 1966; 11752, 1973; 11988, 1977;11990, 1977
- FSM 2500
- FSH 2500
- MOU between the Colorado Department of Natural Resources and the USFS, 2004
- MOU between the Colorado Department of Natural Resources, the Colorado Water Conservation Board, and the BLM, 2005
- FSM 2070
- FSH 2509.13 Burned Area Emergency Rehabilitation.
- Additional standards and guidelines associated with riparian area and wetland ecosystems are found in Sections 2.2 and 2.7.

2.5 Aquatic Ecosystems and Fisheries

Introduction

Aquatic ecosystems of the SJNF and TRFO support a variety of water-dependent species, populations, and communities of plants and animals. These ecosystems include various types of flowing and standing waters that provide aquatic habitats sufficient to support the many biotic communities that depend on abundant, clean waters. The major biological components of these ecosystems include fish, amphibians, macroinvertebrates, zooplankton, macrophytes, and periphyton communities. The physical components are composed of features such as stream gradient, sinuosity, substrate material, stream bank material, large woody debris, and most importantly, water (refer also to Section 2.6, Water Resources).

These aquatic ecosystems play a critical role in the social, economic, and ecological well-being of the region. In addition to supporting some of the richest and most productive habitats for a variety of wildlife and plant species, they provide municipal and industrial water to communities, and serve as one of the primary recreational resources of the area. According to the USFWS National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, fishing related expenditures contributed over $41.8 billion to the U.S. economy in 2011 (USFWS 2013b). Over 33 million anglers, 27 million of which were freshwater anglers, contributed an average of $1,261 each to local economies, and the demand for fishing-related recreation

continues to increase annually. The national statistics for 2011 represent an 11% increase over those observed for 2010. Waters of the SJNF and TRFO provide some of the best fishing opportunities the western United States has to offer, including pristine wilderness lakes and streams that support outstanding trout fisheries and lower elevation lakes that provide exceptional fishing for warm-water species such as bass (Perciformes), pike (*Esox* sp.), and sunfishes (Centrarchidae).

Although many of the waters in the planning area are in excellent condition, just as many have been altered over time. Starting with the early settlement periods, a variety of land management activities occurring throughout the area have altered the physical integrity of SJNF and TRFO aquatic ecosystems. Recreation activities, mining, oil and gas development, livestock grazing, timber harvesting, road construction, and numerous water-development projects have individually and collectively reduced the quantity and quality of aquatic habitats. As a result, the ability to support healthy, self-sustaining populations of fish and other aquatic biota has been reduced in a number of the streams and rivers located within the planning area. This is most evident in areas impacted by consumptive uses of water. The cumulative impacts of hundreds of existing water developments have resulted in adverse and ongoing impacts to the composition, structure, and function of aquatic ecosystems. Where fish population monitoring has been conducted downstream of major water developments, significant decreases in population densities have been observed.

In addition to the physical alterations described above, biological components have also been altered. The introduction of non-native fish species, as well as the occurrence of potentially lethal pathogens, has contributed to the decline of some species. For example, the stocking of non-native trout species occurring over several decades has come at a significant cost to native cutthroat trout populations. Native sucker species have also declined due to the loss of aquatic habitat, and as a result of hybridization with the introduced white sucker (*Catostomus commersonii*). The parasite Myxoboluscerebralis, which causes whirling disease in trout, is becoming more widespread throughout the planning area and is known to have increased mortality rates for infected trout populations.

More recently, fish population levels have been affected by prolonged drought. The reduction in annual precipitation has reduced natural stream flows, increased water temperatures, and at the same time resulted in increased demand for water for human consumptive uses. Without proactive management efforts that address the ongoing and future demand for consumptive water uses, aquatic habitats, and fish populations are likely to experience additional adverse impacts.

The SJNF and TRFO aquatics programs strive to provide the ecological conditions within their streams, rivers, and lakes, sufficient to support a diversity of native and desired non-native fish species and other aquatic biota over the long term. Proactive management of aquatic habitats and populations is critical to reversing downward population trends. Special emphasis is given to recovery efforts for native cutthroat trout (*Oncorhynchus clarkii*) subspecies. Management of the Colorado River cutthroat trout (*O.c. pleuriticus*) is guided by the Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming (Colorado River Cutthroat Trout Task Force 2001). Management of the “greenback lineage” subspecies (*O.c. stomias*) applies the same principles as those for Colorado River cutthroat, but also is also guided by the Greenback Cutthroat Trout Recovery Plan (USFWS 1998a).

Land management activities that incorporate the LRMP objectives for aquatic habitats, implement BMPs, maintain stream flows, and implement site-specific mitigation measures will reduce the risks to SJNF and TRFO aquatic ecosystems. LRMP implementation and consistent monitoring of outcomes for fisheries and aquatic habitats will provide baseline data and allow for assessments of overall trends for aquatic habitats and fish populations. Periodic inventories and surveys of streams and lakes are needed in order to determine the natural range of aquatic habitat conditions, habitat quality, population levels, and overall aquatic ecosystem health. Habitat improvement projects should be designed and implemented where limiting factor assessments have specifically identified habitat-related constraints to aquatic populations. Inventory and monitoring will also provide the information necessary to help identify needs for possible LRMP amendments or other changes in management practices. Scientific efforts to track changing conditions in key habitats, and for specific species, are an important step in accomplishing objectives and achieving desired conditions for the aquatics program.

LRMP implementation involves close coordination with CPW and the USFWS. In addition, partnerships with other state and federal agencies, as well as with interested individuals and organizations, are also an important means to achieve desired conditions and accomplish multiple objectives. Partnerships will yield much needed funding for aquatic habitat management activities.

Most importantly, water developments and other authorized special uses that impact aquatic ecosystems should contain terms and conditions necessary to minimize the severity of impacts and ultimately achieve LRMP objectives and desired conditions. The FLPMA specifies that special uses granted by the Secretary of Agriculture or the Secretary of the Interior are subject to terms and conditions that "minimize damage to fish and wildlife habitat and otherwise protect the environment." In addition, the Aquatic Resource Management Manual requires the BLM to establish aquatic resource management objectives in land use plans (Section 6720.13B) and to identify the flow needs and water quality requirements for aquatic habitats (Section 6720.15 and 6720/16).

Ensuring adequate stream flow and lake levels are prerequisites to maintaining healthy aquatic ecosystems and providing for the long-term viability of fish populations. Cooperative and collaborative efforts are the preferred approach to sustaining aquatic ecosystems and ensuring that viable populations of aquatic species are maintained or improved. While the land management agencies see water development as a legitimate use of public lands, those consumptive uses must be balanced with the many other legitimate uses for water on the SJNF and TRFO. Toward that end, a variety of options will be considered for the continued authorization of existing water facilities and for the development of new consumptive water uses, while ensuring that minimum levels of instream flow will be maintained adequate to meet the applicable regulatory requirements and the goals and objectives of the SJNF and TRFO.

As described in Section 2.1, the LRMP applies three approaches to ensure the maintenance of species diversity and long-term population viability, as applicable to each agency: the designation of protected areas, the ecosystem management strategy, and a species-specific management strategy that addresses the special needs of certain species. Management direction has been developed that is intended to address the legal, regulatory, and policy requirements for species diversity and population viability. A range of key ecosystem elements were identified and the relative importance of those elements to maintaining species diversity and population viability was determined. The desired future conditions, management objectives, and standards and guidelines listed below were developed for those elements found to be most critical to the maintenance of species diversity and population viability for aquatic species (Volume III, Appendix Q).

Aquatic Special Status Species

Aquatic special status species for the SJNF and TRFO are listed in Table 2.5.1. These species receive special management emphasis due to their historic declines and present concern about their viability. In addition to the LRMP components that specifically address some of the needs of these species, the SJNF and TRFO use additional guidance in the form of recovery plans and conservation strategies, examples of which are listed within Table 2.5.1. The common objective among the LRMP components, recovery plans, and conservation strategies are to 1) stabilize and maintain existing populations, and 2) expand the distribution and overall abundance of these species to a point where long-term viability is no longer of concern. The LRMP components were developed with these two fundamental objectives in mind.

Unless a formal change in the status of greenback lineage cutthroat trout is recognized by the USFWS, populations of greenback lineage cutthroat trout on the SJNF and TRFO will be treated as a federally listed species and afforded full protection under the ESA. The Greenback Cutthroat Trout Recovery Plan (USFWS 1998a) will be used as management guidance for greenback lineage populations on the SJNF and TRFO.

In addition, agency actions that result in consumptive water uses must be in compliance with the Section 7 Agreement and Recovery Implementation Program Action Plan (USFWS 1993) and San Juan Basin Recovery Implementation Program (USFWS 2003) for four endangered fish species found in the Upper Colorado and San Juan River systems (Colorado pikeminnow [*Ptychocheilus lucius*], razorback sucker [*Xyrauchen texanus*], humpback chub [*Gila cypha*], and bonytail [*G. elegans*]).

Table 2.5.1: Special Status Aquatic Species for the San Juan National Forest and Tres Rios Field Office

Aquatic Special Status Species	Current Status	Species Management Plan
Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*)	Region 2 Sensitive Species BLM Sensitive	Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming (Colorado River Cutthroat Trout Task Force 2001)
Greenback lineage cutthroat trout (*Oncorhynchus clarki stomias*)	USFWS Threatened	Greenback Cutthroat Trout Recovery Plan (USFWS 1998a)
Bluehead sucker (*Catostomus discobolus*)	Region 2 Sensitive BLM Sensitive	Bluehead Sucker: A Technical Conservation Assessment (USFS 2005b)
Flannelmouth sucker (*Catostomus latipinnis*)	Region 2 Sensitive BLM Sensitive	Flannelmouth Sucker: A Technical Conservation Assessment (USFS 2005c)
Roundtail chub (*Gila robusta robusta*)	Region 2 Sensitive BLM Sensitive	Roundtail Chub: A Technical Conservation Assessment (USFS 2005d)
Boreal toad (*Bufo boreas boreas*)	Region 2 Sensitive BLM Sensitive	Boreal Toad Conservation Plan and Agreement (USFWS 2001b)
Colorado pikeminnow (*Ptychocheilus lucius*)	USFWS Endangered BLM Sensitive (present on BLM lands only)	Recovery Implementation Program for Endangered Fish Species In The Upper Colorado River Basin (USFWS 1995), Colorado Squawfish Recovery Plan (USFWS 1991)
Downstream big river fishes Note: Three species (razorback sucker, humpback chub, bonytail) are not present on the SJNF or TRFO, but are affected by management actions on the SJNF and TRFO that result in water depletions to the lower basins.	USFWS Endangered BLM Sensitive	Recovery Implementation Program for Endangered Fish Species In The Upper Colorado River Basin (USFWS 1995), San Juan River Basin Recovery Implementation Program (USFWS 2003), Razorback Sucker Recovery Plan (USFWS 1998b), Bonytail Chub Revised Recovery Plan (USFWS 1990a), Humpback Chub Recovery Plan (USFWS 1990b)

Aquatic Management Indicator Species

Aquatic MIS for the SJNF are identified in Table 2.5.2. The table also lists factors of concern and management issues addressed for the SJNF. These species are selected to primarily assess the effects of management activities on populations of aquatic species and their associated habitats. Significant changes in MIS populations, or their habitats, would necessitate a review of current management direction to ensure that SJNF management is not adversely affecting the composition, structure, or function of aquatic ecosystems and their dependent species. Monitoring and evaluation of population trends of these species and their habitats are specifically addressed within the LRMP Monitoring Plan. (see Chapter 4, Monitoring Plans).

Table 2.5.2: Management Indicator Species for the San Juan National Forest

Management Indicator Species	Factors of Concern	Primary Management Issues
Cutthroat trout (*Oncorhynchus clarki*) Brook trout (*Salvelinus fontinalis*) Brown trout (*Salmo trutta*) Rainbow trout (*Oncorhynchus mykiss*)	Lentic and lotic habitats: water quantity, water quality, physical habitat features, invasive species, disease	Effects to water quantity due to water depletions associated with reservoirs, diversions, and oil and gas development. Effects to water quality and water temperature due to soil erosion and sedimentation associated with ground-disturbing activities (fuels treatments, oil and gas development, timber harvest, livestock grazing, road construction, and recreation). Inadvertent exotic and invasive species introductions.

Desired Conditions

2.5.1 Long-term sustainability of aquatic ecosystems is maintained.

2.5.2 Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities.

2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.

2.5.4 Channel characteristics, water quality, flow regimens, and physical habitat features are diverse and appropriately reflect the climate, geology, and natural biota of the area.

2.5.5 An adequate range of stream flow provides for the long-term maintenance of physical habitat features. Channel features, including bank stability, width-to-depth ratio, pool/riffle ratio, pool depth, slope, sinuosity, cover, and substrate composition, are commensurate with those expected to occur under natural ranges of stream flow.

2.5.6 Water flow conditions in streams, lakes, springs, seeps, wetlands, fens, and aquifers support functioning habitats for a variety of aquatic and semi-aquatic species and communities.

2.5.7 Macroinvertebrate diversity and abundance reflect high water quality.

2.5.8 Populations of aquatic species are adequately mobile, genetically diverse, and functionally diverse throughout the planning area.

2.5.9 Aquatic systems are connected in a manner that avoids fragmentation of aquatic habitats and isolation of aquatic species. Connectivity between water bodies provides for all life history functions of aquatic species except where barriers are beneficial and necessary to achieve conservation goals for certain aquatic species.

2.5.10 All native and desired non-native fish species are disease free and thrive in the vast majority of systems historically capable of supporting such species.

2.5.11 Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.

2.5.12 Threats to Colorado River cutthroat trout and its habitat are eliminated or reduced to the greatest extent possible.

2.5.13 The distribution of Colorado River cutthroat trout is increased where ecologically, sociologically, and economically feasible.

Objectives

2.5.14 Annually evaluate seven streams (five streams on NFS lands and two on BLM lands) for adequacy of instream flows sufficient to maintain population viability and otherwise achieve LRMP direction.

2.5.15 Annually enhance or restore at least 4 miles of stream habitat (3 miles on NFS lands and 1 mile on BLM lands) to maintain or restore the structure, composition, and function of physical habitat for USFS and BLM sensitive species or USFS MIS species.

2.5.16 Over the life of the LRMP, connect at least 10 miles of fragmented stream habitat (8 miles on NFS lands and 2 miles on BLM lands) to provide for aquatic species movement.

2.5.17 Over the life of the LRMP, establish two self-sustaining meta-populations on NFS lands, each consisting of five separate but interconnected sub-populations. In addition, establish one new population in each Geographic Management Unit within the historic range (Colorado River Cutthroat Trout Task Force 2001).

Standards

2.5.18 Where native or desired non-native fish species occur, or should occur, a minimum level of aquatic habitat shall be maintained by identifying the minimum flow rates required to support that habitat using at least one of the following four options (2.5.19a–2.5.19d):

2.5.18a. From April 1 through September 30, an instantaneous minimum flow equal to 40% of the average annual flow; from October 1 through March 31, an instantaneous minimum flow equal to 20% of the average annual flow (Tennant 1972).

2.5.18b. Stream flow in riffle habitats shall be maintained at levels that maintain the minimum values for mean water depth, wetted perimeter, and mean velocity, as defined in Table 2.5.3, for each stream size category (e.g., bankfull width).

2.5.18c. Stream flow in each reach shall be sufficient to maintain a minimum of 50% of the weighted usable area, for each life stage of each target species (USFWS 1984). The weighted usable area baseline (100%) will be the amount of habitat that would occur under natural, unaltered flow conditions.

2.5.18d. Stream flow in each reach shall be maintained at levels that have been determined using alternate methods and where it can be clearly demonstrated, to the satisfaction of the USFS and/or BLM, that said flows will be adequate to achieve the LRMP's goals and objectives for population viability and sustainable aquatic ecosystems.

Table 2.5.3: Metrics Applicable to Standard 2.5.18b

Bankfull Width (feet)	Mean Depth (feet)	Wetted Perimeter (%)	Mean Velocity (feet/second)
1–2	≥ 0.2	50	1.0
21–40	0.2–0.4	50	1.0
41–60	0.4–0.6	50–60	1.0
> 60	> 0.6	> 60	1.0

2.5.19 Prior to use in other waters, all agency, partnering agency, and contractor field equipment having had contact with whirling disease waters must be decontaminated using current decontamination procedures.

2.5.20 To prevent the spread of chitrid disease, established decontamination protocols must be used when working in waters and water influence zones for current and historic breeding sites for all sensitive and listed aquatic and amphibious species.

Guidelines

2.5.21 Agency actions should maintain or improve all existing habitat for designated conservation populations of Colorado River cutthroat trout (Colorado River Cutthroat Trout Task Force 2001).

2.5.22 Minimum pool levels should be established for water storage facilities where aquatic USFS MIS and/or BLM or USFS sensitive species occur.

2.5.23 Except where barriers are beneficial and necessary to achieve conservation goals for certain aquatic species, fragmentation of aquatic habitats and isolation of aquatic species should be avoided.

2.5.24 Sediment delivery to streams occupied by MIS or threatened, endangered, or sensitive species should be avoided.

2.5.25 Activities that may cause sedimentation to amphibian habitats should be minimized.

2.5.26 Drainage of acid-mine runoff into riparian areas and wetland amphibian habitats should be avoided.

2.5.27 Agency actions should avoid or mitigate impacts within 100 feet of boreal toad (*Bufo boreas boreas*) breeding sites between May 15 and September 30 (breeding season).

2.5.28 Agency actions should maintain or improve hydrologic function and water quality of known and historic breeding sites for all sensitive and listed aquatic and amphibious species to provide for effective habitat.

Additional Guidance

- FSH 2509.19, Watershed Conservation Practices Handbook
- FSH 2509.25, Watershed Conservation Practices Handbook (Region 2 Supplement)
- FSM 2600, Wildlife, Fish, and Sensitive Plant Habitat Management
- FSH 2609.13, Wildlife and Fisheries Program Management Handbook
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (2007)
- Greenback Cutthroat Trout Recovery Plan (USFWS 1998a)
- Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (USFWS 1995)
- San Juan River Basin Recovery Implementation Program (USFWS 2003)
- Razorback Sucker Recovery Plan (USFWS 1998b)
- Colorado Squawfish Recovery Plan (USFWS 1991)
- Bonytail Chub Revised Recovery Plan (USFWS 1990a)
- Humpback Chub Recovery Plan (USFWS 1990b)
- Range-wide Conservation and Strategy for Roundtail Chub, Bluehead Sucker, and Flannelmouth Sucker (Utah Department of Natural Resources 2006)
- Conservation Agreement and Strategy for Colorado River Cutthroat Trout in the States of Colorado, Utah, and Wyoming (Colorado Cutthroat Trout Task Force 2001)
- BLM Manual 6720, Aquatic Resource Management, Fish and Wildlife Management
- BLM Manual 6840, Sensitive Species Management (2008)

- Inventory and Monitoring: Recommended Techniques for Reptiles and Amphibians (Graeter et al. 2013)
- Boreal Toad Conservation Plan and Agreement (USFWS 2001b)
- Fungus Contamination Prevention Guidelines found in CPW Procedures for Monitoring and Surveying Boreal Toad Populations, 2004

Standards and guidelines for aquatic invasive species are also found in Section 2.8, Invasive Species.

2.6 Water Resources

Introduction

The planning area encompasses the headwaters of several large river systems including the San Juan, Piedra, Los Pinos, Florida, Animas, and Dolores Rivers. These river systems are vital resources to several western states. The upper-elevation mountainous areas of the SJNF and TRFO receive relatively abundant precipitation, and perennial streams, lakes, and other water features are common on the landscape. Lower-elevation lands receive much less precipitation and they generally tend to have fewer (although larger) perennial rivers and more intermittent or ephemeral water bodies.

Water Quality

Water quality within the planning area is typically good. In the few surface water bodies exhibiting water quality problems, mercury, heavy metals, salinity, and sediment are the common pollutants. The protection of groundwater from pollution sources is a challenging issue in the planning area. Oil and gas development proposals often have potential to impact groundwater.

Water quality within the planning area is protected primarily through project design, BMPs, and other mitigation measures. BMPs are applied in an adaptive management fashion that includes implementing BMPs, monitoring the implementation and effectiveness of the BMPs, and adjusting management actions if the BMPs are found to not adequately protect water quality. Many water quality mitigation measures and additional guidance for the USFS are contained in the Rocky Mountain Region Soil and Water Conservation Practices Handbook, FSH 2509.25.

The highest priorities for improving water quality will be water bodies included on Colorado's Section 303(d) List of Impaired Waters, saline soil watersheds, priority watersheds identified through the Watershed Condition Framework (USFS 2012a), and/or watersheds identified as having the highest level of anthropogenic disturbance (see Volume III, Appendix I). Monitoring the implementation and effectiveness of water quality improvement projects and water quality protection measures will continue to be a required component to meeting the intent of the Clean Water Act throughout the planning area. In compliance with the Colorado River Basin Salinity Control Act, the SJNF and TRFO will use watershed restoration, stream enhancement, erosion control, and other measures to reduce or prevent salt from entering tributaries of the Colorado River.

Maintain or Improve Watershed Condition and the Function of Streams and Floodplains

Streams of the SJNF and TRFO should effectively transport sediment and a natural range of flows, including periodic floods. Streams should also provide aquatic and riparian habitat, and support a broad spectrum of recreational opportunities.

Many watersheds throughout the planning area exhibit poor watershed conditions as a result of the cumulative impacts of management activities. For example, high road densities, as well as poor road placement, design, and maintenance, have caused water quality, floodplain, and channel morphology changes in some watersheds. Poor condition watersheds have been identified through the Watershed Condition Framework (USFS 2012a) and the San Juan National Forest Aquatic Ecosystem Assessment (USFS 2006). Similar landscape-scale watershed condition assessments have not yet been completed

for BLM lands. BLM and USFS watersheds of concern are listed in Volume III, Appendix I. Priority watersheds as designated through the Watershed Condition Framework are displayed on the online USFS Watershed Condition Classification map viewer (USFS 2013). Watersheds where integrated restoration efforts have the best chance of successfully improving impaired watershed conditions or can maintain properly functioning watershed conditions will be given priority for restoration.

Manage Water Uses

Existing water development projects range in size from small ponds and irrigation ditches to large-scale diversion and storage projects (such as the Dolores Project/McPhee Reservoir). Many of these projects have long-term impacts to aquatic resources within the planning area. Due to increasing public demand, proposals for new water development projects continue to increase. Addressing increasing water demands while, at the same time, maintaining the integrity of aquatic ecosystems may be one of the biggest challenges to public lands management over the next few decades.

Existing non-federal water uses and proposed new uses on SJNF and TRFO lands are authorized pursuant to applicable federal authorities, current agency policies and directives, and additional consideration given to applicable interagency MOUs and agreements. Surface water and groundwater development authorizations (both new and re-issuances) must contain the necessary terms and conditions to meet terrestrial, aquatic, and/or other resource management desired conditions and objectives as required by the FLPMA.

Where water is necessary for federal uses within the planning area, water rights for consumptive uses will be obtained by the USFS and BLM. Federal purposes typically include water for livestock, recreation, aesthetics, facilities, evaporation, irrigation, augmentation and exchange, administrative sites, firefighting purposes, and terrestrial and aquatic wildlife. The successful management of water uses will require extra attention to administrative process and details. One important task will be a monthly review of water rights resumes. The SJNF and TRFO may engage in proceedings for new water rights applications, change applications, or reassertion of conditional water rights if necessary to protect USFS and BLM water rights or natural resources.

When evaluating priorities for flow and habitat protection, streams supporting federally listed species and/or sensitive species, streams that have a high level of recreational use(s), and perennial streams that are currently undeveloped (no existing water developments) will be emphasized.

Desired Conditions

Water Quality

2.6.1 State water quality standards and anti-degradation rules are met and state-classified water uses are supported for all water bodies.

2.6.2 Water quality for impaired water bodies on the State of Colorado's 303(d) list move toward fully supporting state-classified uses.

2.6.3 State "Outstanding Waters" within the planning area maintain the high levels of water quality necessary for this status.

2.6.4 Watersheds within the planning area containing saline soils exhibit stable upland, riparian, and channel conditions that produce water quality as close as possible to reference conditions (as defined in FSH 2509.25 for the USFS); they produce the lowest possible saline contributions to the upper Colorado River (per the Colorado River Basin Salinity Control Act for the BLM) (see Volume III, Appendix I for saline watersheds).

2.6.5 Water from SJNF and TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds (as defined in FSM 2542 for the USFS). Enhancement may be achieved by watershed restoration or other activities.

Stream Channels and Floodplains

2.6.6 Stream channel types that naturally build floodplains are connected to their floodplains and riparian areas, maintain the ability to transport overbank flows (which occur on the average every 1.5 years), and are capable of transporting moderate or high flow events.

2.6.7 Physical channel characteristics are in dynamic equilibrium and commensurate with the natural ranges of discharge and sediment load provided to a stream. Streams have the most probable form and the expected native riparian vegetation composition within the valley landforms that they occupy; they function correctly without management intervention.

2.6.8 Historically disturbed and degraded stream channels recover through floodplain development; establishment of riparian vegetation with correct structure, composition, and function; and stable channel geomorphic characteristics.

Groundwater Resources

2.6.9 Aquifers maintain natural conditions of recharge and discharge, especially where they are important to surface features dependent on groundwater for their existence (including caves, karst, springs, seeps, lakes, riparian areas, hanging gardens, wetland ecosystems, fens, and intermittent and perennial streams).

2.6.10 Potentially usable aquifers and water-bearing intervals possessing groundwater of quality and/or quantity that could provide multiple-use benefits and maintain water quality at natural conditions.

2.6.11 Administrative and permitted activities on the SJNF and TRFO do not contribute to the reduction of surface water or groundwater that supplies seasonal springs, seeps, small ponds, and small wetlands considered most vulnerable to a changing climate.

Watershed Conditions, Watershed Scale, and Water Uses

2.6.12 Upland areas function properly and do not contribute to stream-channel degradation.

2.6.13 The majority of undeveloped and unregulated or free-flowing streams within the planning area are retained in their current undeveloped condition; they provide potential reference conditions and offer unique opportunities for aquatic habitat, recreation, species conservation, and pleasing aesthetics.

2.6.14 The overall function and integrity of streams impacted by water developments are adequately protected for their baseline ecological and recreational values. This is accomplished by providing for adequate stream flows as part of water development planning for existing or new water development projects. This includes sustaining ecological processes dependent on flow within the impacted watersheds.

2.6.15 In unique cases where water is transferred from one catchment to another, water lost (i.e., there is no return flow) from watersheds as a result of water transfer does not adversely alter or impact the aquatic ecology of the watershed or the stream. Conversely, aquatic ecology and stability of the streams and watersheds receiving imported water are not adversely impacted.

2.6.16 All water developments for federal purposes have state water rights, if applicable. The beneficial use of water continues over the implementation life of the LRMP, when the water is available.

2.6.17 All approved water developments that involve the use of SJNF and TRFO lands are permitted pursuant to applicable federal authorizations.

Objectives

Water Quality

2.6.18 Work with the selenium task force annually to reduce salt delivery to the upper Colorado River Basin.

2.6.19 Every 5 years rehabilitate 10 or more acres to reduce erosion and sedimentation delivery to water bodies on both TRFO and SJNF lands. For SJNF lands, conduct the work in priority watersheds, including those with water bodies listed for sediment impairment or that have total maximum daily loads (TMDLs) established for sediment.

2.6.20 Over the implementation life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State of Colorado 303(d) listed impaired water bodies within the planning area (both TRFO and SJNF lands).

2.6.21 Over the life of the LRMP, implement BMPs to minimize management impacts to water quality on TRFO and SJNF lands. The effectiveness of BMPs will be improved if necessary through adaptive management.

Maintain or Improve Watershed Condition and Stream/Floodplain Function

2.6.22 Annually, treat approximately 20 acres or more in SJNF priority watersheds in order to improve poor watershed conditions or maintain good watershed conditions. The goal is to move a watershed from an impacted condition class to a better condition class or to maintain a good condition class.

2.6.23 Annually decommission 6 linear miles or more of unneeded routes that may consist of roads and/or trails on SJNF lands. Routes will be decommissioned on TRFO lands as identified through the travel management planning process. Watersheds listed in Volume III, Appendix I could be considered priority for decommissioning efforts. Watersheds designated as priority through the USFS Watershed Condition Framework should also be focus areas for route decommissioning.

Managing Water Uses

2.6.24 Annually acquire new appropriated water rights for 30 USFS water uses (including water rights for livestock, recreation, administrative, or other uses) within the planning area. For TRFO lands, pursue appropriated water rights for new or outstanding BLM water uses.

2.6.25 Over the implementation life of the LRMP, put all consumptive use water rights owned by the BLM and USFS to beneficial use and that use documented.

2.6.26 Based on review of monthly water court resumes, enter into any water court case necessary to protect BLM or USFS water rights and water-dependent resources.

2.6.27 Over the life of the LRMP, enforce compliance where the USFS or BLM place conditions and other requirements on special use authorizations related to water diversion or storage that are outside the jurisdiction of the Colorado Division of Water Resources.

2.6.28 Over the next 10 years, improve the efficiency of water and energy use at all administrative facilities on the SJNF by using the minimum consumption practicable.

Standards

2.6.29 Land use activities (new projects, or replacement/retrofitted/reconstructed/reauthorized projects) must not impact potentially useable groundwater quality or quantity to the extent that groundwater-dependent features are adversely affected. Examples of some groundwater-dependent features are springs, seeps, fens, and intermittent or perennial streams.

2.6.30 Activities must not be allowed within aquatic management zones that will cause a long-term change from desired conditions. The protection or improvement of riparian values, water quality, aquatic community, and for long-term stream health in these areas must be emphasized. Aquatic management zones have a minimum horizontal width from the top of each bank of 100 feet or the mean height of the mature late-seral vegetation, whichever is greater.

2.6.31 In all places where technically feasible, pitless, self-contained drilling systems (e.g., closed loop drilling systems) must be used for all leasable fluid minerals wells.

Guidelines

2.6.32 Roads and trails that are removed from the SJNF transportation network, as well as maintenance level 1 roads (i.e., roads that have been closed to the public but may be used in the future principally for administrative purposes), should be treated sufficiently where no further management intervention would be necessary in order to sustain long-term natural processes. This will avoid future risks to watershed functions, water quality, and/or aquatic habitat. Sufficient treatments may include removal of unstable fills, effective and permanent breaching of drainage ditches, elimination of persistent in-sloped road surfaces; complete removal of stream-crossing structures and associated fills with restoration of floodplains, and the maintenance or restoration of fish passages.

2.6.33 Ditches authorized on the SJNF or TRFO should maintain a sufficient freeboard above the water line of the ditch to avoid or minimize damage to the ditch or from overtopping. Headgates and conveyance structures should be maintained in good functioning condition and should be clear of sediment and other debris in order to ensure proper operation. The operator should close the headgate at the end of the diversion (e.g., irrigation) season.

2.6.34 Water conveyance structures authorized on the SJNF or TRFO should be maintained to prevent and control soil erosion and gullying on adjacent lands resulting from operations and maintenance of the structure. Design criteria may include maintaining the ditch channel to prevent downcutting and ditch failure, removal of all obstructions from the channel, and prompt remediation of pipeline breaks and ditch failures, and rehabilitation of any erosion resulting from failure of a water conveyance structure.

2.6.34a Water conveyance structures authorized on the SJNF or TRFO should allow for the passage of aquatic organisms if there is the potential to obstruct such passage to potential or occupied habitat.

2.6.34b Headgates should contain measurement devices that can be used to determine compliance with land use authorization permits.

2.6.35 As a general practice non-toxic fluid, additives, and other materials should be used for well drilling to protect surface water and groundwater quality.

2.6.36 Exploration and production waste should be disposed of using BMPs that meet state regulations and specific BLM or USFS requirements. Exploration and production waste should be disposed of in such a manner as to not to inhibit reclamation success of the site.

2.6.37 Operators should use proven technologies for the recycling of fresh water, drilling fluids, and produced water for reuse in drilling and completion operations or other beneficial purposes whenever possible.

2.6.38 As individual fields are developed, centralized liquid gathering systems should be used for the delivery and gathering of drilling, completion, and produced fluids such as fresh water, waste/produced water, and condensate.

2.6.39 Water Use and Disposal Management Plans should be included in Plans of Development for fluid minerals projects and solid minerals projects.

2.6.40 Ground disturbance, facilities construction, and incompatible land management activities (those activities that may pose a risk of impacting water quality) on SJNF lands should be prohibited on lands within 1,000 horizontal feet of either side of a classified surface water supply stream segment (as measured from the average high water mark of a water body) for a distance of 5 miles upstream of public water supply intakes for towns, cities, and municipalities. These activities should also be prohibited within a minimum distance of 1,000 horizontal feet for source water protection areas for towns, cities, and municipalities using a groundwater well or spring.

Additional Guidance

- The Colorado River Basin Salinity Control Act of 1974
- the Clean Water Act of 1977
- EO 11288, 1966
- EO 11752, 1973
- EO 11988, 1977
- EO 11990, 1977
- FSM 2500
- FSH 2500
- MOU between the Colorado Department of Natural Resources and the USFS, 2004
- MOU between the Colorado Department of Natural Resources, the Colorado Water Conservation Board, and the BLM, 2005
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (2007)
- FSH 2509.13, Burned Area Emergency Rehabilitation
- National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (USFS 2012b)
- MOU between the Colorado Department of Public Health and Environment (CDPHE) and the USFS (USFS 2009a)
- USFS BMPs in FSM 2532 and FS 2509.19
- Region 2 Watershed Conservation Practices Handbook (Region 2 FSH 2509.25-2006-1)

2.7 Livestock and Rangeland Management

Introduction

Livestock grazing initially began in the 1880s to support local mining operations and take advantage of the natural grasslands. As the rate of homesteading increased, and other laws designed to increase the rate of western settlement were passed, livestock numbers on public lands increased. With the creation of the SJNF in 1906, federal livestock management was directed toward allocating forage to local dependent users. With the passage of the Taylor Grazing Act in 1934, the same approach was continued on BLM public lands (and the days of the open range came to an end).

Generally, rangeland management activities from the 1940s through the late1980s were directed toward improving watershed conditions in the West through the use of large amounts of capital and new technology. Rangeland management practices designed to accomplish these goals included increased water development, fencing, brush control practices, reseeding, and the use of intensive grazing systems. It was generally believed that this prescriptive approach would meet management objectives.

From the late 1980s to the present, rangeland management activities have been directed toward improving rangelands through adaptive management. Factors including the increase in big game numbers, the listing of threatened and endangered species, the implementation of hazardous fuels reduction projects, ongoing drought, and persistent water quality issues have all added to management challenges.

Cattle numbers peaked in the 1920s; sheep numbers peaked in the 1930s. Currently, livestock numbers are at 50% and 5%, respectively, of their historic highs. Market factors, administrative actions, and an ongoing drought have all contributed to the USFS and the BLM not meeting planned levels for permitted use in the past few decades.

Rangeland Planning

Management decisions and their associated NEPA analyses identify grazing actions, the need for rangeland improvements required to implement a proposed action, appropriate mitigation measures, and necessary monitoring activities so that outcomes trend towards the desired conditions listed below. Adaptive management tools should be used to improve on-the-ground management and respond to changing conditions so that desired conditions are met. Per current policy, NEPA compliance should be completed on all active BLM and USFS allotments (as guided by BLM permit renewal schedules and the USFS Rescissions Act of 1995). In addition, periodic reviews of analyses and decisions should be conducted in order to ensure that NEPA-based decisions stay current and sustainable for all permitted livestock grazing.

Management decisions, based on NEPA analyses, may result in the modification and/or development of new AMPs. New AMPs should be completed within 1 year of a grazing decision. Vacant allotments not initially analyzed under Rescissions Act planning or as part of a decision to issue a grazing permit will be evaluated over the implementation life of the LRMP in order to determine their value for restocking, use as forage reserves, altering management, or closure and dedication to other uses or values.

Rangeland Monitoring

Implementation monitoring, or annual short-term monitoring, determines whether guidelines and management practices are implemented. This will include, but is not limited to, annual allotment monitoring in order to determine if utilization guidelines have been achieved, range improvements have been constructed and/or maintained to standards, actual use has been reported by grazing permittees, and pasture rotations have been followed. Effectiveness monitoring will help managers evaluate whether desired conditions are being achieved. Validation monitoring will help managers evaluate whether the information upon which guidelines and objectives are based is valid and correct. On-the-ground indicators identified in the Colorado State Public Land Health Standards (BLM 1997) are a frame of reference for determining whether management changes are necessary on public lands. Grazing allotments undergoing NEPA analysis, and effectiveness monitoring on grazing allotments with a current grazing decision, will be monitoring priorities. Annually, effectiveness monitoring will be conducted on at least 10% of active SJNF allotments. All allotments will be monitored on a rotating basis. Monitoring information will be used to make management changes using adaptive management principles. The TRFO will use the BLM Assessment, Inventory and Monitoring Strategy (BLM 2012a) to plan and implement rangeland monitoring. The objectives of the Assessment, Inventory and Monitoring Strategy are to establish a scientifically based quantitative process for describing and reporting on the trend and condition of public lands and to report on the effectiveness of the BLM's management decisions and actions. The strategy outlines a process for developing new inventory or monitoring activities and provides a standard to evaluate ongoing monitoring activities.

Range Improvements

Range improvement projects (including fences, water developments, vegetation improvement projects, etc.) will be implemented, as necessary, in order to move the program toward desired conditions and/or address other resource concerns. These projects will be described and authorized in site-specific NEPA analyses. Range improvements will be prioritized in AMPs based on resource objectives. Per agency policy, prior to implementing projects that require temporary changes to current livestock management (e.g., seeding, prescribed fire, fuel reduction projects), range permittees on the SJNF will receive at least 1 year's notice, and 2 years notice for permittees on TRFO lands. Range betterment funds on SJNF lands are used for projects within range allotments. Grazing allotments with current NEPA decisions should be given the highest priority when considering the use of range betterment funds. Where range improvement projects benefit multiple resources, other funding sources should be considered to complete the project in addition to range betterment funds.

Suitability and Availability of Lands for Livestock Grazing

The NFMA and the 1982 USFS planning regulations require that NFS lands be identified as suitable or unsuitable for livestock grazing. The BLM Land Use Planning Handbook requires that BLM lands be identified as available or unavailable for livestock grazing. Using the processes described in the BLM's Land Use Planning Handbook and the USFS Region 2 Desk Guide, a suitability analysis was conducted for all TRFO and SJNF lands. It provides a determination of areas generally suitable and capable for livestock grazing. Availability of allotments on TRFO lands was determined based on the suitability analysis.

For TRFO lands, 388,202 acres are available for cattle grazing, and 31,973 acres are available for sheep. For SJNF lands, 689,628 acres are suitable for cattle, and 183,733 acres are suitable for sheep. There are also a total of 21,152 available animal unit months (AUM) for cattle on TRFO lands, and 2,073 AUMs for sheep (a determination of available AUMs is not required on USFS lands because AUMs under term-grazing permits are determined on an allotment-by-allotment basis; therefore, they can vary according to management, rangeland condition, and trend).

Figures 2.7.1 and 2.7.2 depict lands suitable for livestock grazing across the planning area, and Figure 2.7.3 depicts availability, status and stocking rates on SJNF and TRFO grazing allotments. Volume III, Appendix L lists TRFO grazing allotments available for livestock grazing as well as permitted AUMs by allotment.

Desired Conditions

2.7.1 Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact.

2.7.2 Rangelands and permitted livestock grazing use contribute to the maintenance of large open spaces on private lands.

2.7.3 Permitted livestock grazing fee collections contribute to the local county fund base for roads, schools, and range improvements.

2.7.4 Rangelands provide healthy and sustainable habitat for wildlife populations that, in turn, support recreational hunting, fishing, and/or viewing (thereby contributing to the local and regional economy).

2.7.5 Rangelands provide diverse, healthy, and sustainable plant communities and conserve soil quality.

2.7.6 Suitable rangelands on SJNF lands are meeting desired conditions of affected resources.

2.7.7 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands do not decrease due to livestock grazing management.

2.7.8 Rangeland management maintains or increases the abundance and distribution of Arizona fescue in ponderosa pine forests.

Objectives

2.7.9 Annually administer at least 25% of active SJNF and TRFO (improve and maintain category) grazing allotments to standard on a priority basis ensuring that all active grazing allotments during the life of the LRMP receive appropriate administration. Work with grazing permittees and peers to resolve livestock grazing management issues. Take appropriate administrative action as needed to improve livestock grazing management.

2.7.10 Within 15 years, working with partners and cooperators, reconstruct 25% of priority structural range improvements on SJNF lands in order to maintain infrastructure integrity.

Standards

Livestock Management

2.7.11 Grazing permit administration in occupied bighorn sheep habitat must utilize measures to prevent physical contact between domestic sheep and bighorn sheep. Permit administration actions may include but are not limited to use of guard dogs, grazing rotation adjustments, or relocation of salting and bed grounds.

2.7.12 Management of domestic sheep must utilize measures to prevent physical contact with bighorn sheep.

Rangeland Vegetation

2.7.13 Project-level NEPA analysis and decisions, and the resultant AMPs, must identify key herbaceous and woody plant species and their respective utilization guidelines.

2.7.14 Project-level design must incorporate habitat needs to satisfy MIS desired conditions and objectives within USFS grazing allotments.

Guidelines

Livestock Management

2.7.15 Land managers should phase out grazing systems that allow for livestock use in an individual unit during the entire vegetative growth period (season-long), except where such management has been determined to be able to achieve or maintain desired conditions.

2.7.16 If grazing privileges are relinquished or cancelled on SJNF or TRFO lands where fragile soils, low forage production, low livestock water availability, and/or conflicts with other resources make livestock grazing undesirable, the privileges should not be re-allocated.

2.7.17 Prior to allocating grazing privileges for a new grazing permittee on unallocated grazing allotments, the needs of existing rangeland management, as well as ecological diversity and species viability, should be considered.

2.7.18 Grazing systems should be designed in a manner to provide periodic rest to forage species during the critical growing season in order to promote species diversity, reproduction, and productivity.

2.7.19 Livestock grazing should be avoided during the same time, and in the same place, in consecutive years on NFS lands.

2.7.20 When designing a grazing plan, ongoing and potential forage and browse competition among livestock, big game, and wild horses should be considered.

2.7.21 The designation of grazing allotments to be used as forage reserves should be considered when grazing privileges terminate, if such designations would improve land management as well as livestock management opportunities.

2.7.22 Grazing management activities should be modified in, or livestock excluded from, riparian areas that are “nonfunctional” or “functional-at risk” with a downward trend (as rated by the Proper Functioning Condition protocol), where livestock have been determined to be a key causative agent.

2.7.23 Trailing of livestock should be avoided along riparian areas to the extent practicable.

2.7.24 Rangeland management should incorporate measures to conserve soil quality.

2.7.25 The BLM should consider closing custodial allotments when term grazing permits expire where public lands cannot be properly managed due to the subdividing of surrounding base property, or due to insufficient or livestock water availability, access, management flexibility, and/or lack of capable rangeland.

Rangeland Vegetation

2.7.26 Vegetation management planning should emphasize restoration needs in the sagebrush ecosystem type.

2.7.27 Livestock should be moved from the grazing unit or allotment when utilization guidelines on key areas are met or exceeded, as identified in Table 2.7.1, or as specified in a NEPA decision for the particular allotment's AMP or annual operating instructions.

Table 2.7.1: Allowable Use Guidelines by Livestock Grazing Management System

Management System	Allowable Forage Utilization Guideline*
Season-long	30%
Rotation	45%
Deferred rotation	50%
Rest rotation	50%
* Utilization percentages are expressed in terms of annual forage production present at the time the livestock leave the area and are generally a measurement of designated key species on key areas.	

2.7.28 The residual riparian vegetation guidelines, as shown in Table 2.7.2, should be met or exceeded at the time the livestock leave the pasture/allotment.

Table 2.7.2: Post-grazing Vegetation Heights under Different Seasons of Use in Riparian Areas and Wetlands

Season of Use	Residual Riparian Vegetation Height*
Season-long (i.e., no regrowth potential)	6 inches
Early growing season (i.e., significant regrowth potential)	3 inches
Mid-season (i.e., limited regrowth potential)	4 inches
Late season (i.e., little to no regrowth potential)	4–6 inches
Late fall and winter (i.e., dormant season use)	6 inches
* Maximum riparian and wetland allowable use (residue) guidelines to be applied on key sedge or rush species. For riparian areas lacking sedge and/or rush species, use existing herbaceous vegetation utilization guidelines. Consider the duration livestock has access to key areas when setting allowable use guidelines—the shorter the duration, the less the opportunity for repeat grazing of individual plants.	

2.7.29 Allowable use, residual vegetation, and other grazing guidelines apply to wildlife, livestock, and wild horses. If allowable use guidelines are exceeded, reductions to livestock forage utilization levels, wild horse numbers, or recommendations for reductions in wildlife numbers should be made.

2.7.30 Based on vegetation type, sheep grazing should be planned to reflect moderate use after grazing. Where appropriate, such as areas outside the aspen-forb type, forage should show that it has

been topped and selectively grazed; trampling should be minimal and trailing may be evident, but not common. Within the aspen-forb type trampling and trailing may be evident, but day bedding close to water, as well as well as trailing to and from water, should not be evident.

Range Improvements

2.7.31 Project planning should consider the need to retreat non-structural range improvements.

2.7.32 Livestock grazing use should be deferred following vegetation treatments, such as prescribed fire or wildfire, until recovery objectives are met or it is demonstrated that such use would not be detrimental.

2.7.33 Where appropriate, and where the appropriate kind and class of livestock are available, livestock grazing should be considered as an invasive species management tool.

2.7.34 Wildlife needs should be considered in the design of structural and non-structural range improvements.

2.7.35 Livestock grazing on lands proposed for disposal should not be re-authorized after current term grazing permits expire, unless disposal will not occur within the term of the new permit.

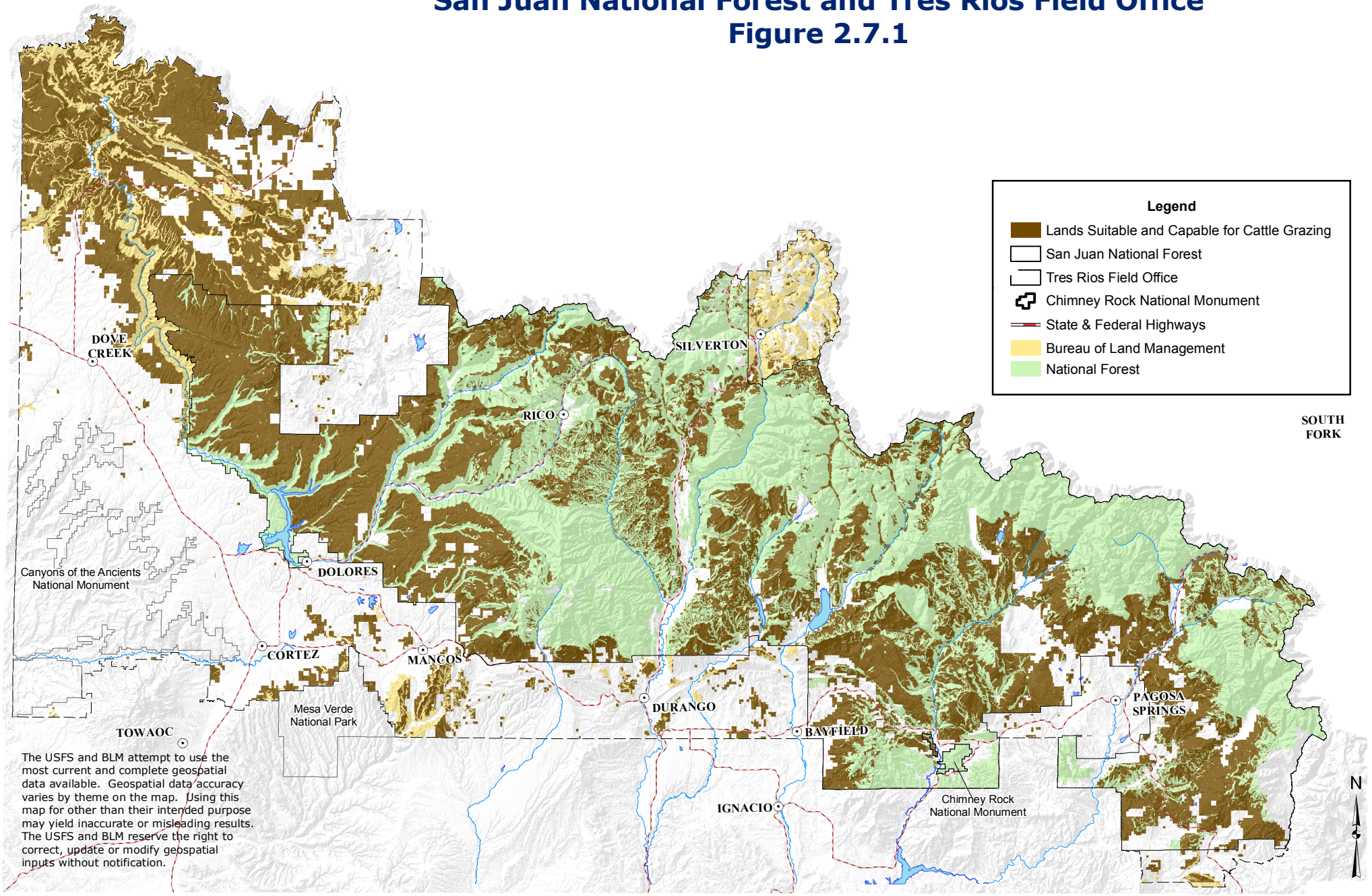
Additional Guidance

- Taylor Grazing Act of 1934, as amended
- Public Rangelands Improvement Act of 1978
- Multiple-Use/Sustained- Yield Act of 1960
- Wilderness Act of 1964, Section 4(4)
- Section 504 of the Rescissions Act of 1995
- Consolidated Appropriations Resolutions, 1999–2003
- Colorado Public Land Health Standards EA and Finding of No Significant Impact (FONSI), 1997
- 43 CFR 4100 and 36 CFR 222 Subpart A
- FSM 2200
- FSM 1950
- FSH 1905.15, Environmental Policy and Procedures Handbook
- FSH 1909.17, Economic and Social Analysis Handbook
- FSH 2509.13, Burned Area Rehabilitation Handbook
- FSH 2509.25, Watershed Conservation Practices Handbook
- FSH 2409.19, Renewable Resource Uses for Knutson-Vandenberg (K-V) Fund Handbook
- FSH 2109.13, Grazing Permit Administration Handbook
- USFS Rocky Mountain Region Rangeland Analysis and Management Training Guide (USFS 1996a)
- Interagency Technical References
- BLM Handbook 4180-1, Rangeland Health Standards
- BLM Handbook 4120-1, Grazing Management
- BLM Handbooks 4010 and 4010-1, Range Management Program Records
- BLM Handbook 4110-1, Qualifications and Preference
- BLM Handbook 4160-1, Administrative Remedies
- BLM Handbook 4400, Rangeland Inventory, Monitoring, and Evaluation
- BLM Handbook 4150-1, Unauthorized Grazing Use
- BLM Handbook H-1790-1, NEPA Handbook
- Various BLM IMs and Informational Bulletins relating to rangeland administration and management

Lands Suitable and Capable for Cattle Grazing

San Juan National Forest and Tres Rios Field Office

Figure 2.7.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
April 24, 2013

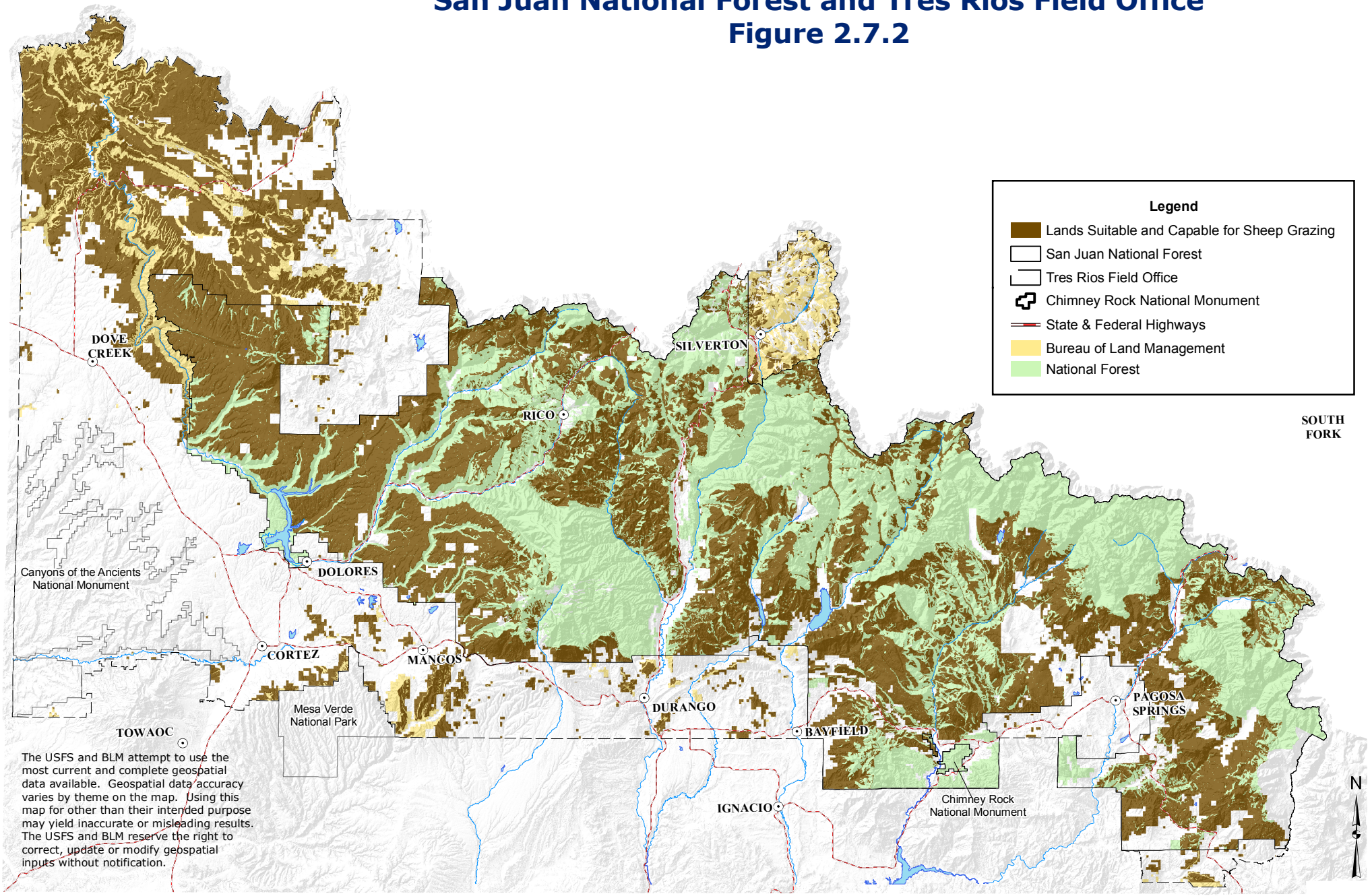
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Lands Suitable and Capable for Sheep Grazing

San Juan National Forest and Tres Rios Field Office

Figure 2.7.2



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
April 25, 2013

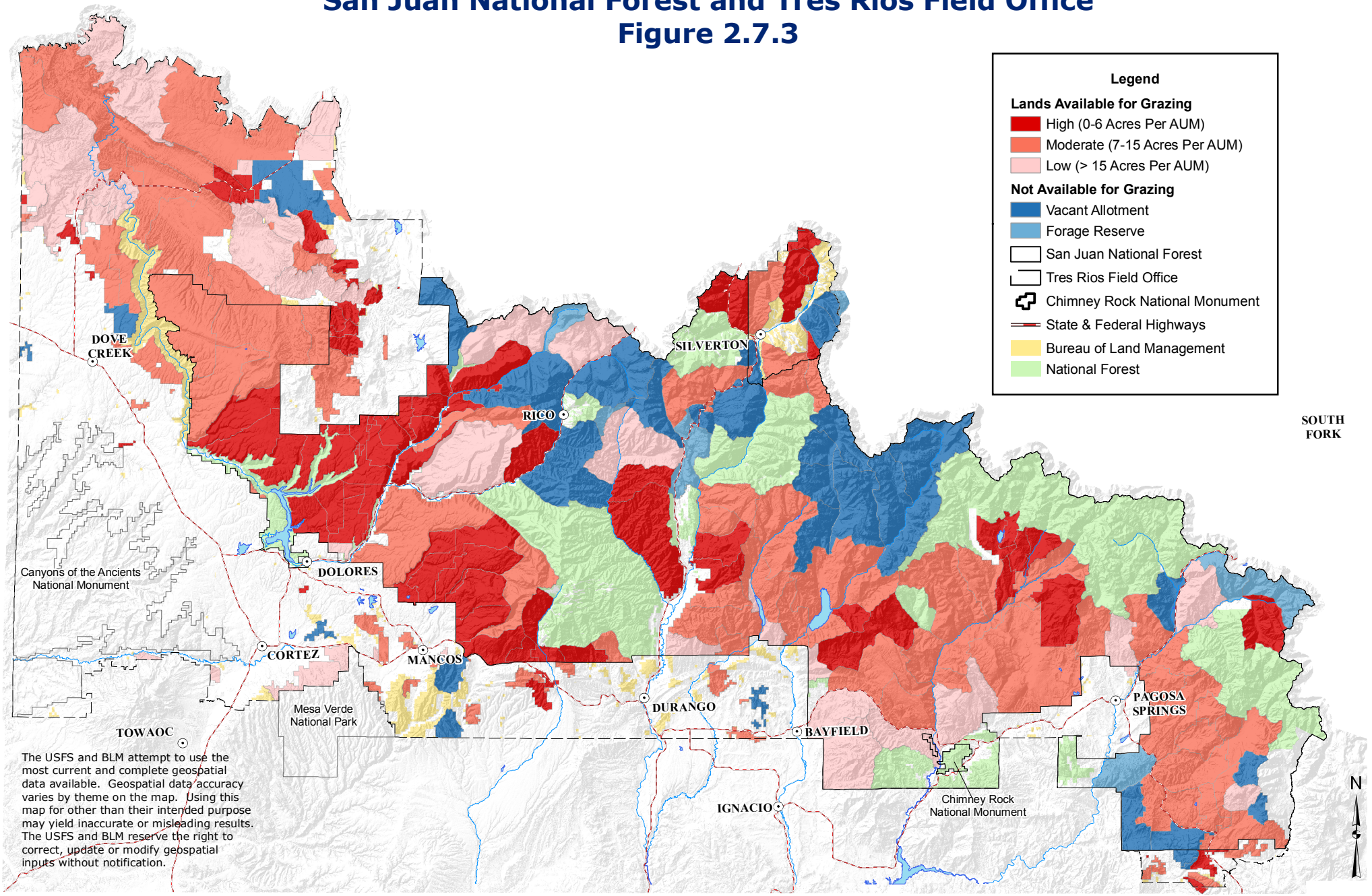
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Available Grazing Allotments and Comparative Stocking Rates

San Juan National Forest and Tres Rios Field Office

Figure 2.7.3


Legend
Lands Available for Grazing
High (0-6 Acres Per AUM)
Moderate (7-15 Acres Per AUM)
Low (> 15 Acres Per AUM)
Not Available for Grazing
Vacant Allotment
Forage Reserve
San Juan National Forest
Tres Rios Field Office
Chimney Rock National Monument
State & Federal Highways
Bureau of Land Management
National Forest
DOVE CREEK
SILVERTON
RICO
SOUTH FORK
Canyons of the Ancients National Monument
DOLORES
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
April 25, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

2.8 Invasive Species

Introduction

Within the planning area, invasive plants are currently managed in accordance with an Invasive Species Action Plan (USFS and BLM 2012). This plan, which covers a 3- to 5-year time frame, lists prevention practices, early detection and rapid response strategies, and priority inventory and treatment areas. All resource areas participate in invasive species management within the planning area. Invasive terrestrial wildlife species, as well as aquatic invasive species, have the potential to out-compete native species using similar niches within the ecosystem. These changes may result from influences to the biotic (relating to, produced by, or caused by living organisms, such as plant or animal) and abiotic (non-living chemical and physical factors in the environment, such as soils, hydrology, etc.) components of the ecosystem. The resulting changes may allow invasive species to directly or indirectly impact the native species and their related ecosystems.

Invasive species move across jurisdictional boundaries and property lines; therefore, LRMP implementation will involve close coordination and partnerships with local, state, other federal agencies, and tribal governments; as well as with interested organizations and individuals. Partners and contractors will be considered when implementing invasive treatment activities.

Coordination with CPW when addressing aquatic invasive species is particularly important. The USFS and BLM will cooperate with CPW to regularly determine the extent of aquatic invasives populations, develop prevention and early detection efforts, and develop appropriate management plans to eradicate or manage invasive aquatic species.

It is equally important that special use permittees and other permittees be made aware of prevention and mitigation measure regarding aquatic invasive species. In addition, Resource Advisors should also be able to provide Incident Management Teams with local, site-specific information addressing aquatic invasive species locations and appropriate mitigation measures.

Desired Conditions

2.8.1 Invasive species management is coordinated with adjacent landowners.

2.8.2 Federal lands have a transportation system composed of specific roads and trails that do not contribute to the spread of invasive species along travel corridors.

2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area, and are not influencing native populations or ecosystem function.

2.8.4 Invasive species are not introduced or spread within protected areas.

2.8.5 Management activities do not contribute to the spread of invasive annual plants or other invasive species.

Objectives

2.8.6 Within 15 years, contain priority Class B invasive species on TRFO and SJNF lands identified in the Invasive Species Action Plan.

2.8.7 Within 15 years, increase annual treated acres of noxious weeds to 10% of known acres infested on TRFO and SJNF lands.

2.8.8 Within 15 years, annual backcountry treatment (including wilderness areas and WSAs) is 10% to 15% of the total annual noxious weed treatment target on SJNF and TRFO lands.

2.8.9 Over the life of the LRMP eradicate newly established invasive species especially Colorado Class A noxious species on both SJNF and TRFO lands.

Standards

2.8.10 Projects or activities that would authorize the use of forage products must use certified noxious weed seed-free forage products.

2.8.11 Invasive species must be managed using integrated weed management principles.

2.8.12 The SJNF and TRFO must include provisions that are necessary to prevent the spread of and to control the introduction of invasive species in contracts and permits for use of SJNF and TRFO lands and resources.

Guidelines

2.8.13 Cleaning facilities and associated educational materials should be developed for boating areas in cooperation with CPW or other state and local regulatory agencies.

2.8.14 Wildland fire operations should follow direction provided in Interagency Standards for Fire and Fire Aviation Operations (NFES 2724; USFS et al. 2013) under the Operational Guidelines for Aquatic Invasive Species section to prevent the introduction and spread of aquatic invasive species.

2.8.15 Project planning and implementation should consider the need to prevent the introduction and spread of aquatic invasive species. The SJNF and TRFO Invasive Species Action Plan (USFS et al. 2012) provides a useful reference for appropriate management and mitigation measures.

2.8.16 High risk aquatic invasive species areas should be a priority for inventory and monitoring activities.

2.8.17 Proper equipment (e.g., vehicles, waders), cleaning techniques, and chemicals should be used as necessary to prevent the spread and establishment of aquatic invasive species.

2.8.18 For all proposed projects or activities, the risk of invasive aquatic and plant species introduction or spread should be determined and appropriate prevention and mitigation measures implemented.

Additional Guidance

- EO 13112
- Carson-Foley Act of 1968
- Federal Noxious Weed Act of 1974
- Public Rangelands Improvement Act of 1978
- Plant Protection Act of 2000
- Healthy Forests Restoration Act of 2003
- Wilderness Act of 964, Section 2 (c)
- Federal Insecticide, Fungicide, and Rodenticide Act of 1972
- Cooperative Forestry Assistance Act of 1978
- Resource Conservation and Recovery Act of 1976
- CERCLA
- Management and Control of Noxious Plants on the San Juan/Rio Grande National Forests, Decision Notice and FONSI (USFS 1996b)
- BLM Vegetation Treatments Using Herbicides Final Programmatic EIS Record of Decision (BLM 2007a)
- Integrated Weed Management Plan (CO-800-2008-075 EA) (BLM 2011c)
- FSM 2200

- FSM 2080
- BLM Manual 9015
- FSH 2109.14, Pesticide Use-Management and Coordination Handbook
- FSH 2509.13, Burned Area Rehabilitation Handbook
- FSH 2509.25 Watershed Conservation Practices Handbook
- FSH 2409.19, Renewable Resource Uses for Knutson-Vandenberg (K-V) Fund Handbook
- Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act (8 CCR 1203-10)
- USFS National Strategy and Implementation Plan for Invasive Species Management (FS-805-2004) (USFS 2004f)
- USFS Guide to Noxious Weed Prevention Practices (Version 1.0) (USFS 2001b)
- BLM Partners Against Weeds (BLM 1996)
- Various BLM IMs and Information Bulletins relating to noxious weed management and pesticide use

2.9 Timber and Other Forest Products

Introduction

This section is focused primarily on timber management on NFS lands and ties to USFS regulations. Information applicable to BLM lands is specifically noted.

The timber management program on the SJNF has followed the trend of many other national forests with regard to harvest levels. The SJNF was a source for timber products to meet demand early in the twentieth century in support of mining and settlement, with another spike in harvesting following World War II. The highest harvest levels occurred in the early 1970s when 50 to 75 million of board feet (MMBF) of timber were sold annually. Since that time, harvesting levels have continued to decline, and many larger local mills have closed. Annual timber sales recently have averaged about 10 MMBF. The planning area includes aspen, which has been actively managed since the 1940s. There is currently not an active commercial timber program on the BLM lands within the planning area; however, non-commercial products (including post and poles, Christmas trees, and other non-forest products) are available.

The forest products industry continues to be very important to communities near the planning area. Currently, several wood processing facilities are located in Montezuma County, including Western Excelsior Corporation, Aspen Wall Wood, and the Stoner Top Sawmill. A new facility is under design, expected to be constructed in the Pagosa Springs area in 2013–2014, to process wood chips and mill cants. These facilities use/will use a variety of products (sawtimber, poles, miscellaneous biomass) and species (various conifer and aspen). Although the level of timber harvesting has declined in the past decade, ecologically based desired conditions in forested areas are, in large part, dependent on the timber program and the capacity of the timber industry to change vegetation conditions. Without the timber industry, the ability to manage vegetation would be significantly reduced. Commercial timber harvesting is an important tool for managing vegetation on the SJNF, and forest product firms provide economic balance to their respective communities.

There are many opportunities for vegetation management and for meeting the demand for products by wood-processing industries. However, the feasibility of these opportunities depends on future program levels and on forest products industry capacity and market demand. The timber program across both SJNF and TRFO lands will focus treatment in:

- landscapes in the WUI that have altered fire regimes and/or have areas with high fuel loadings;
- landscapes at high risk for developing epidemic levels of insect and/or disease infestation;
- landscapes where disturbance (such as fire, or insects/disease) has resulted in dead or dying trees;

- areas where vegetation management could most effectively move age classes, size classes, density, and species closer to desired conditions;
- areas treated previously in order to maintain sustainable conditions and improve scenic integrity; and
- areas where wood processing facilities can effectively and economically utilize products resulting from vegetation management.

Strategies to meet forest vegetation management objectives across the SJNF and TRFO include:

- utilization of forest resources from vegetation management activities, including providing small-diameter and biomass products from treatments in order to support emerging biomass markets;
- trees killed by fire, insects, disease, or weather events (such as wind-thrown trees);
- a balance of forest product quantity, size, species and quality in order to maintain forest products industry capacity at current or higher levels;
- integration of the timber and fuels programs to meet overlapping or common goals; and
- a combination of legal authorities and partnerships to broaden opportunities for meeting forest vegetation objectives, in priority landscapes or areas, with cost-effective treatments.

Timber Product Outputs

The Timber Sale Program Quantity (TSPQ) is an estimate of annual average output of timber from the SJNF during the first decade under this LRMP based on expected budget levels, industry capacity, and other public and resource objectives. The intent is to provide a stable, predictable, and sustainable supply of wood that will contribute to a stable, sustainable, and diverse forest products industry, while concurrently meeting public demand for fuelwood and other objectives for vegetation management. The TSPQ is a combined program of timber management treatments from USFS lands designated as "Suitable for Timber Production" and other lands. Table 2.9.1 presents the volumes to be offered for sale, summarized by conifer and aspen..

The SJNF has a program of vegetation management in which timber sales are offered based on capability determined by the LTSYC, which is defined as the highest uniform wood yield that may be sustained under specified management intensities consistent with multiple-use objectives after stands have reached desired conditions. The LTSYC for both "Lands Suitable for Timber Production" and other lands are displayed in Table 2.9.2.

Table 2.9.1: Estimated Volume Produced by the Timber Sale Program Quantity on San Juan National Forest Lands, Annual Average in the First Decade

TSPQ	Lands Suitable for Timber Production				Other Lands				Total	
	Sawtimber		Products other than Logs		Sawtimber		Products other than Logs			
	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF
Aspen			1.12	5.61			0.12	0.59	1.24	6.20
Conifer	1.05	5.26			0.07	0.36			1.13	5.63
Total									2.37	11.83
MMCF = million cubic feet.										

Table 2.9.2: Estimated Annual Long-Term-Sustained-Yield Capacity on San Juan National Forest Lands, Annual Average

	Lands Suitable for Timber Production		Other Lands	
	MMCF/Year	MMBF/Year	MMCF/Year	MMBF/Year
LTSYC	8.54	35.55	1.82	7.03
Allowable Sale Quantity	4.0	19.9		
MMCF = million cubic feet.				

Timber Suitability

Timber suitability is determined through a process established through the NFMA and planning regulations. This process first identifies lands not suitable for harvest by excluding areas where 1) site conditions preclude tree cover, 2) harvest is prohibited by statute or regulation (e.g., wilderness), 3) irreversible resource damage could occur from timber harvest (e.g., steep or unstable slopes), and 4) adequate restocking, with trees, following harvest is not assured. The SJNF contains 1,157,816 acres not suitable for timber production, and the TRFO contains 476,323 acres not suitable. Lands remaining after this exclusionary process are deemed "tentatively suitable." These remaining lands are broken into two classes: 1) lands suitable for timber production ("suitable timberlands") and 2) "other tentatively suitable lands where timber harvest may occur" for multiple-use objectives other than timber production. The SJNF contains 311,949 acres of suitable timberlands, and 395,067 acres of other tentatively suitable lands where timber harvest may occur. The TRFO contains no suitable timberlands, but does contain 27,309 acres of other tentatively suitable lands where timber harvest may occur. Figure 2.9 displays these areas.

Desired Conditions

2.9.1 Forest vegetation management on SJNF and TRFO lands that results in, among other objectives, meeting needs or demands for forest product offerings (commercial, personal, or other use) is done in a manner that:

- maintains or improves ecosystem function, resilience, and sustainability;
- supports, at least, the current level of economic activity in the local timber industry;
- provides economic or social support to local communities;
- ensures current and future needs for Native American tribal use, including that associated with special forest products (e.g., teepee poles);
- utilizes, to the fullest extent practicable, potential products including sawtimber, poles, topwood, or slash (e.g., limbs, foliage);
- supports innovation in utilization, including conversion of cut-tree mass into biofuels, pellets, biochar, or other useful products;
- efficiently balances or reduces costs of implementation of treatment activities; and
- anticipates climate-related plant succession changes (such as favoring heat- or drought-resistant tree species as leave trees, or in reforestation).

2.9.2 SJNF lands classified as "suitable" for timber production have a regularly scheduled timber harvesting program (see Figure 2.9).

2.9.3 SJNF lands classified as "not suitable" for regularly scheduled timber production (but where timber harvesting could occur for other multiple-use purposes) have an irregular, unscheduled timber harvesting program (see Figure 2.9).

2.9.4 Reforestation activities on SJNF and TRFO lands use native tree species germinated from locally collected seed stock to improve the resiliency of forest ecosystems.

Objectives

2.9.5 The most common applications of timber harvest, to meet desired conditions, will include:

2.9.5a Within 10 years, conduct thinning—with an emphasis on restoration and fuels reduction of altered forest types—in the ponderosa pine and warm-dry mixed conifer vegetation types on approximately 15,000 to 20,000 acres of SJNF lands.

2.9.5b Within 10 years, emphasize selection harvests in cool-moist mixed conifer and spruce-fir vegetation types on approximately 2,500 to 5,000 acres of SJNF lands and 200 to 300 acres of TRFO lands.

2.9.5c Within 10 years, utilize coppice harvest (clearcuts with regeneration by sprouting) in aspen and cool-moist mixed conifer forest types on approximately 4,000 to 5,000 acres of SJNF lands.

2.9.6 Meet or exceed average annual timber product offerings from SJNF lands to local timber industries, publics, and other users (including Native Americans), as displayed in Tables 2.9.1 and 2.9.2 above, over the life of the LRMP.

2.9.7 Every 3 years evaluate utilization of forest products from SJNF or TRFO contracts and permits that result in product sales or usage, including biomass.

2.9.8 Every 3 years compare, contrast, and evaluate costs of implementation of timber management projects.

2.9.9 Every 3 years review silvicultural prescriptions for incorporation of strategies that anticipate potential plant succession changes relative to warmer and/or drier forested conditions.

2.9.10 Every 10 years assess timber suitability for forested lands on the SJNF.

2.9.11 Annually review seed inventories to ensure adequate seed from locally collected native tree species is available for planned reforestation activities on SJNF and TRFO lands.

Standards

2.9.12 Regulated timber harvest activities will occur on only those SJNF lands classified as "suitable" and "scheduled" for timber production. On unsuitable or suitable but not scheduled lands, limited timber cutting may occur for such purposes as salvage, protection or enhancement of biodiversity or wildlife habitat, scenic-resource management, or research or administrative studies consistent with Management Area (MA) direction.

2.9.13 Timber will be harvested from suitable for production SJNF lands only where there is assurance lands can be adequately restocked within 5 years after harvest. No minimum seedling height requirements are specified. Seedlings must have survived a minimum of 1 year and be expected (on the basis of research and experience) to be able to produce the desired future stand condition specified for this area in the forest plan. The number of seedlings in Table 2.9.3 represents the minimum number of seedlings required, considering natural mortality, to produce a merchantable timber stand at rotation age without intermediate treatments for even-aged management on lands scheduled for timber production. Silvicultural prescriptions must specify the minimum stocking requirements for uneven-aged management, or regeneration harvests on lands not scheduled for timber production, to achieve appropriate forest cover.

Table 2.9.3: Minimum Number of Seedlings (or aspen suckers) for Adequately Restocking of a Regeneration Site

Vegetation Type	Minimum Numbers of Seedlings (per acre)
Spruce-fir	150
Aspen	300

Vegetation Type	Minimum Numbers of Seedlings (per acre)
Mixed conifer	150
Ponderosa pine	150

2.9.14 The silvicultural systems shown, by forest vegetation type in Table 2.9.4, that meet the management objectives for the landscape or individual stands of trees within a landscape setting are acceptable. Both even- and uneven-aged management systems can be used and applied at scales ranging from a few acres to many hundreds of acres. These silvicultural systems are to be applied in a manner that will ensure natural regeneration where artificial regeneration is not necessary for other resource objectives. Tree-stand vegetation management treatments must be approved by certified silviculturists.

Table 2.9.4: Appropriate Silvicultural Systems by Forest Vegetation Type

Forest Vegetation Type	Even-aged	Two-aged	Uneven-aged
Ponderosa pine	Shelterwood; seed tree	Irregular shelterwood	Group selection; single-tree selection
Warm-dry mixed conifer	Shelterwood; seed tree	Irregular shelterwood	Group selection; single-tree selection
Cool-moist mixed conifer	Shelterwood; clearcut seed tree	Irregular shelterwood	Group selection; single-tree selection
Aspen with conifer	Shelterwood; clearcut; coppice*	Irregular shelterwood; coppice with standards**	Group selection; single-tree selection
Aspen	Coppice	Coppice with standards	Group Selection
Engelmann spruce – subalpine fir	Shelterwood	Irregular shelterwood	Group selection; single-tree selection

*Clearcut, if intent is to regenerate with conifer; coppice (vegetative reproduction with "clear felling" to stimulate aspen sprouting from residual roots) if the intent is to regenerate aspen.
**Standards are selected overstory trees reserved for a longer rotation at the time each crop of coppice material is cut.

2.9.15 The maximum size of openings created by even-age management on SJNF lands will be 40 acres, regardless of forest type, with the following exceptions:

- proposals for larger openings may be approved by the Regional Forester, subject to a 60-day public review;
- where larger openings are the result of natural catastrophic conditions (including those resulting from fire, insect or disease attack, or windstorm); or
- where the area that is cut does not meet the definition of created openings.

2.9.16 Artificially created openings on SJNF lands will no longer be considered openings when the trees reach a height and density that meets management objectives. The default criteria are when the minimum stocking standards for the forest vegetation type are met and the average height is 6 feet or greater with at least a 70% distribution for conifer species and 10 feet or greater with at least a 70% distribution for aspen. The criteria will be validated and may be modified based upon local conditions encountered during implementation. Criteria to consider in determining when an opening is no longer an opening include:

- visual sensitivity of the area;
- the character of the landscape;
- the abundance, quality, and need for cover for big game animals;
- other vegetation that may be present (such as tall shrubs);
- forest health;
- the need for seed sources;
- the need for interior forest area;
- the production of wood fiber; and

- watershed and riparian area protection.

Guidelines

2.9.17 Table 2.9.5 shows the acceptable types of stand improvements and regeneration methods that should be used in a given forest vegetation type in order to meet the management objectives for the landscape and/or for individual stands of trees within a landscape setting.

2.9.18 Regeneration harvests of even-aged timber stands (sites) on SJNF lands should not be undertaken until the stands have generally reached or surpassed 95% of the culmination of the mean annual increment measured in cubic feet. Exceptions may be made where resource management objectives or special resource considerations require earlier harvest, such as:

- stands in imminent danger from insect or disease attack;
- wildlife habitat improvement;
- scenery resource enhancement or rehabilitation;
- ecosystem restoration; and
- areas managed for Christmas tree production.

Table 2.9.5: Guidelines for Allowable Stand Improvements and Regeneration Methods by Forest Vegetation Type

Forest Vegetation Type	Stand Improvements	Regeneration Methods
Ponderosa pine	Pre-commercial thin Commercial thin Sanitation Release and weed Improvement cuts	Natural Artificial
Warm-Dry mixed conifer	Pre-commercial thin Commercial thin Sanitation Release and weed Improvement cuts	Natural Artificial
Cool-Moist mixed conifer	Pre-commercial thin Commercial thin Sanitation Release and weed Improvement cuts	Natural Artificial
Aspen with conifer	Commercial thin Sanitation Release and weed Improvement cuts	Natural Artificial
Aspen	Sanitation Improvement cuts	Natural
Engelmann spruce – subalpine fir	Commercial thin Sanitation Release and weed Improvement cuts	Natural Artificial

2.9.19 USFS Utilization Standards for live and dead trees are shown in Table 2.9.6 and should be followed.

Table 2.9.6: U.S. Forest Service Utilization Standards[1]

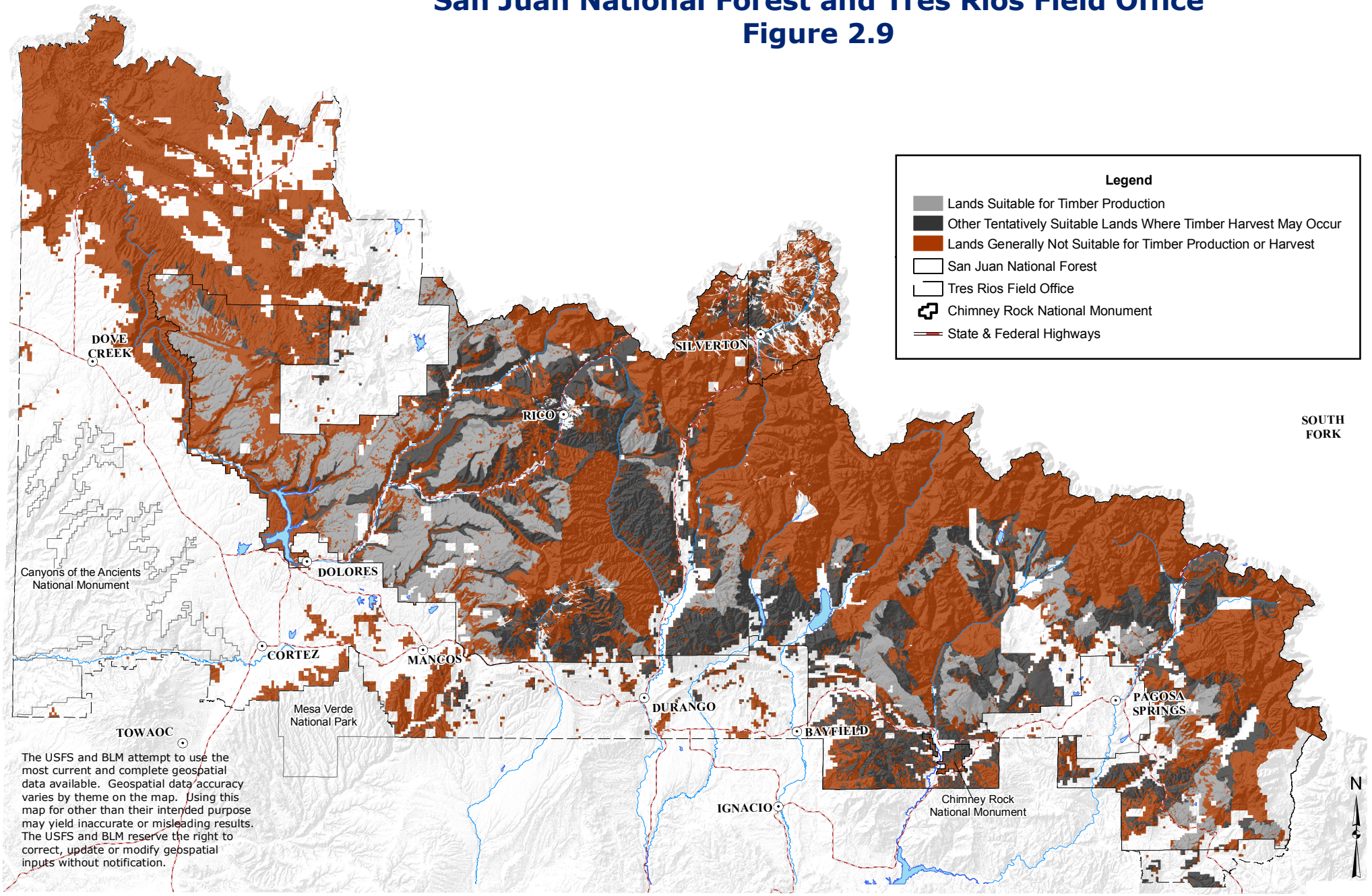
Type of Product	Minimum Diameter at Breast Height	Top Diameter	Minimum Length (feet)	Merchantability Factor
Live Trees				

Type of Product	Minimum Diameter at Breast Height	Top Diameter	Minimum Length (feet)	Merchantability Factor
Coniferous sawtimber	7–9	6	8	10.67
Products other than sawtimber	5	4	6.5	Variable
Dead Trees				
Sawtimber	8–12	6–10	8-16	10.67
Products other than sawtimber	5	4	6.5	Variable
[1]FSH 2409.12 - Timber Cruising Handbook				

Timber Suitability

San Juan National Forest and Tres Rios Field Office

Figure 2.9



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
May 31, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Additional Guidance

- 36 CFR 221, Timber Management Planning
- 36 CFR 223, Sale and Disposal of National Forest System Timber
- FSM 1920, Land Management Planning
- FSM 2400, Timber Management
- FSM 3400, Forest Pest Management
- FSH 1900 Planning
- Timber sale contract provisions and procurement contracts

2.10 Insects and Disease

Introduction

Natural disturbances on SJNF and TRFO lands (including fire, insects, diseases, and weather events) play a fundamental role in shaping ecosystems at the stand scale and in creating the heterogeneous pattern of vegetation communities at the landscape scale. Fire is generally viewed as having the greatest potential to impact SJNF and TRFO lands, but, in actuality, many more trees are killed—and a larger area is influenced—by insects and disease, as recently evidenced by the pinyon Ips beetle (*Ips confusus*) epidemic of 2001–2004, which killed up to 90% of pinyon pine trees in the pinyon-juniper woodlands of southwest Colorado (Colorado Department of Natural Resources 2005), the ongoing spruce beetle (*Dendroctonus rufipennis*) epidemic that has killed many to most mature Engelmann spruce across an estimated 130,000 acres of the SJNF from 1996 to 2012 (Rocky Mountain Region 2012), or the other observed multi-year spikes in mortality in Douglas-fir, white fir, or aspen from bark beetles, or beetles combined with disease, since 2004.

Insects and diseases (which tend to be species-specific and often attack plants that have been weakened by other disturbances such as drought) affect tree growth, fire potential, nutrient cycling, and the composition and structure of the vegetation (Schmid and Mata 1996). At endemic levels, native insects have little impact on forest structure. At epidemic levels, insects can cause tree mortality across whole landscapes. Diseases generally increase gradually or remain at similar levels over time (Rocky Mountain Region 2010). Diseases often weaken trees, making them more susceptible to bark beetle attack. Defoliators, such as western spruce budworm (*Choristoneura occidentalis*), can cause substantial damage outside periods of drought when and where favorable moisture and stand conditions result in abundant host habitat.

Insects that can have a significant impact on forest stands on SJNF lands include spruce beetle, Douglas-fir beetle (*Dendroctonus pseudotsugae*), western pine beetle (*D. brevicomis*), mountain pine beetle (*D. ponderosae*), fir engraver beetle (*Scolytus ventralis*), and western spruce budworm (*Choristoneura occidentalis*). Other insects that impact the planning area include Douglas-fir pole beetle (*Pseudohylesinus nebulosus*), western balsam bark beetle *(Dryocoetes confusus*), engraver beetle (*Ips* sp.), roundheaded pine beetle (*D. adjunctus*), pinyon twig beetle (*Pityophthorus* sp.), aspen bark beetles (*Tryphloeus populi and Procryphalus mucronatus*), bronze poplar borer (*Agrilus liragus*), poplar borer (*Saperda calcarata*), western tent caterpillar (*Malacosoma californicum*), large aspen tortrix (*Choristoneura conflictana*), and aspen leaf miner (*Phyllocnistis populiella*). Grasshoppers (various species) and Mormon crickets (*Anabrus simplex*) can also become pests through periodic population increases.

Diseases that have a significant impact on forest stands on SJNF and TRFO lands include shoestring root rot (*Armillaria ostoyae*), Indian paint fungus (*Echinodontium tinctorium*), red ring decay (*Phellinus pini*), white trunk rot (*P. tremulae*), fir broom rust (*Melampsorella caryophyllacearum*), annosus root rot (*Heterobasidium annosum*), Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*)**,** Southwestern dwarf mistletoe (*A. vaginatum* ssp. *cryptopodum*), pinyon pine dwarf mistletoe (*A. divaricatum*), sooty bark canker (*Encoelia pruinosa*), hypoxylon canker (*Hypoxylon mammatum*), black canker (*Ceratocystis fimbriata*), cytospora canker (*Valsa sordida*), and black stain root fungus (*Leptographium wageneri*).

Desired Conditions

2.10.1 Terrestrial ecosystems have age- or size-class diversity and compositional diversity that make them resistant to insect and disease outbreaks.

2.10.2 Insect and disease processes and cycles are similar to those that occurred during the reference period (HRV conditions) in MA 1.

2.10.3 Epidemic outbreaks are rare after management actions have been completed.

2.10.4 Mortality of aspen trees in high value aspen forests due to sudden aspen decline is significantly reduced.

Objectives

2.10.5 Within 5 years, use coppice timber treatments or prescribed fire to regenerate 500 to 1,000 acres of low-elevation aspen forests that are experiencing sudden aspen decline on SJNF lands.

2.10.6 Within the next 10 years, reduce the risk of mortality due to bark beetles by increasing the mature-open development stage of ponderosa pine forests by 20,000 to 40,000 acres by using timber harvest and prescribed fire in the mature-closed development stage of ponderosa pine forests on SJNF lands.

2.10.7 Within 10 years, continue with treatment of developed recreation facilities, ski areas, and administrative sites to reduce susceptibility and hazards from insect and disease incidence, and increase long-term forest health, vigor, and resiliency on SJNF and TRFO lands.

Additional Guidance

- FSH 2509.13, Burned Area Emergency Rehabilitation
- FSH 2509.25, Watershed Conservation Practices Handbook (Region 2 Supplement)

2.11 Fire and Fuels Management

Introduction

The 1995 Federal Wildland Fire Management Policy (USDA and USDI 1995, updated 2001) contains policies that set the overall direction for federal fire agencies with regards to fire management. The policy requires fire management plans (FMPs) that are integrated with the resource management plans for the USFS and BLM.

The National Fire Plan, a joint planning effort by the USDA and the USDI aimed at reducing immediate hazards to communities in the WUI and ensuring agency preparedness for extreme fire conditions, was completed in 2001 (USDI and USFS 2001). In 2004, the San Juan Public Lands Center developed a strategy to accelerate its efforts to implement watershed and vegetation restoration components of the National Fire Plan in its Accelerated Watershed/Vegetation Restoration Plan.

The San Juan National Forest/Tres Rios Field Office Fire Management Plan (FMP) is a strategic plan defining the fire management program based on the SJNF's and TRFO's desired conditions and objectives. The FMP addresses strategies for all aspects of fire management activities, including implementation tiered from the National Fire Plan (USDA and USDI 2001a) and Accelerated Watershed/Vegetation Restoration Plan. The response to wildland fire, regardless of ignition source or location, is set forth in the FMP and addresses a full range of fire management activities that support ecosystem sustainability, values to be protected, firefighter and public safety, and environmental issues.

The LRMP defines the role of wildland fire and fire management activities covered by the FMP. This LRMP will result in an update or revision of the FMP. Within the FMP are goals, strategies, and guidelines relating to fire based on the overall direction of, and compatibility with, the LRMP. The FMP relies on a cooperative and collaborative process with other federal, state, and local agencies, fire managers, and other stakeholders to develop and implement consistent fire planning. Such planning will include defining Fire Management Units and providing the appropriate management response for all wildland fire starts that are consistent with desired conditions and resource objectives on the SJNF and TRFO.

Ecological and social trends posing management challenges include the following:

- Many of the ponderosa pine and warm-dry mixed conifer vegetation types are out of their HRV for fire frequency since they have missed many cycles of fire, which makes them very susceptible to large scale destructive wildfires.
- The SJNF and TRFO, like the rest of the West, is facing an expansion of rural development in or near forested areas, making fire and fuels management a critical program for federal agencies to manage.
- Requirements and/or constraints associated with prescribed fire are common, collectively making proactive use of fire for ecological benefit more challenging.

The use of wildland fire, along with mechanical and other fuels management strategies, should create forest conditions that meet desired conditions for the vegetation types within the planning area. Providing appropriate response to all wildfires and allowing fire to perform its natural role in the ecosystem, as much as possible, will be an integral part of the program emphasis. Recognizing that effective fire management spans jurisdictional boundaries, the fire and fuels program will also continue to partner with, and assist, local jurisdictions and communities in order to develop community wildfire protection plans designed to reduce the risk of wildfires.

Desired Conditions

2.11.1 Firefighter and public safety concerns are met for all fire management and fuel treatment projects.

2.11.2 Wildfire behavior in the WUI (in and around developed areas and communities) does not result in damage to property and protects public safety.

2.11.3 Wildland fire management maintains a balance between fire suppression and use of wildland fire (including both prescribed fire and natural ignitions) to regulate fuels and maintain forest ecosystems in desired conditions.

2.11.4 Use of wildland fire and fuels reduction treatments creates vegetation conditions that reduce the threat to real property and infrastructure from wildfire.

2.11.5 The WUI will have defensible space and dispersed patterns of fuel conditions that favorably modify wildfire behavior and reduce the rate of wildfire spread in and around communities at risk.

2.11.6 Major vegetation types reflect little or no departure from historic range of variation of fire frequency and intensity (e.g., reflect Fire Regime Condition Class 1).

2.11.7 Planned and unplanned fire ignitions are used to increase resiliency and diversity across all forest and rangeland vegetation types.

2.11.8 Fire is reintroduced to increase the resistance and resiliency of the warm-dry mixed conifer and ponderosa pine forest types in landscape such as the Hermosa and Piedra areas.

2.11.9 The occurrence of low elevation fires burning upward into spruce-fir forest will increase over time to promote the heterogeneity of spruce-fir forests.

Objectives

2.11.10 Annually, for the next 10 years, complete an average of 7,000 acres of SJNF hazardous fuels reduction in the WUI and an average of 1,000 acres of TRFO hazardous fuels reduction in the WUI.

2.11.11 Annually, for the next 10 years, complete an average of 4,000 acres of fuels reduction and resource enhancement using fire managed for resource benefit on SJNF lands, and an average of 1,000 acres of fuels reduction and resource enhancement using fire managed for resource benefit on TRFO lands.

2.11.12 Include evaluations for immediate suppression, management for resource benefit, or a combination of both actions for wildland fire response on both SJNF and TRFO lands.

Standards

2.11.13 Natural fire ignitions will be used, when feasible, to reintroduce fire into fire-adapted and dependent ecosystems. Fire for ecological benefit will be used as a resource management tool where and when allowed.

2.11.14 Restoration and recovery in areas, when possible, must be provided where critical resource concerns merit rehabilitation for controlling the spread of invasive species, protecting areas of cultural concern, or protecting critical or endangered species habitat.

Guidelines

2.11.15 The response to wildland fire, including the role of natural fire, should be evaluated as described in Table 2.11.1 on SJNF lands. Unplanned ignitions, wildland fire tactical options, and planned ignitions on TRFO lands will be determined on a case-by-case basis. Implementation direction for areas with special designations (e.g., ACECs, RNAs) is found in Chapter 3 of this LRMP.

Table 2.11.1: Fire Management Direction for San Juan National Forest Lands

Management Area	Unplanned Ignitions	Wildland Fire Tactical Options	Planned Ignitions[c]
1	x[a]	x	x[b]
2	x[b]	x	x[b]
3–8	x	x	x

[a] Within designated wilderness areas and the Piedra Area, dozers are prohibited (except with Regional Forester approval). Use of helicopters, motorized equipment, and/or mechanical transport is prohibited (except with Forest Supervisor/ District approval). Within other MA 1 areas, dozers are prohibited except with Forest Supervisor/Field Office Manager approval. Chainsaws, engines, ATVs, and pumps are allowed without Forest Supervisor approval.

[b] Mechanical equipment and prescribed fires in RNAs and cultural significant areas would have to be compatible with the overall purposes and objectives for those areas.

[c] Planned ignitions may be implemented by management action authorized by approved plans.

2.11.16 Seeding and other site rehabilitation practices should be provided, as necessary, on wildland fire and managed wildland fire areas. Fire suppression support activities and facilities (including constructed fire lines, fuel breaks and safety areas, fire camps, staging areas, heli-bases, and heli-spots), as well as mechanical and prescribed fire treatment areas, should follow the same site rehabilitation practices.

2.11.17 Aerial application of retardant in live water, wetlands, and riparian areas should be avoided unless necessitated by human safety or property loss considerations.

Additional Guidance

- FSM 5100, Fire Management
- BLM Manual 9210, Fire Management
- FSM 5110, Wildfire Prevention
- FSM 5120, Presuppression Management
- FSM 5130, Fire Suppression
- FSM 5140, Prescribed Fire
- FSM 5150, Fuel Management
- FSM 5160, Fire Management Equipment and Supplies
- FSM 5170, Fire Management Cooperation
- BLM 9200 Series Handbooks for Fire Management Plans, Fire Effects, etc.
- FSM 5180, Fire Reports
- FSM 5190, Management
- FSH 5109.14, Individual Fire Report Handbook
- FSH 5109.17, Wildland Fire Qualifications Handbook
- FSH 5109.18, Wildland and Prescribed Fire Qualifications System Guide
- PMS 310-1, Wildfire Prevention Handbook
- FSH 5109.19, Fire Management Analysis and Planning Handbook
- FSH 5109.31, Wildfire Cause Determination Handbook (NWCG Handbook 1)
- FSH 5109.32a, Fireline Handbook (NWCG Handbook 3)
- FSH 5109.34, Interagency Fire Business Management Handbook (NWCG Handbook 2)
- Nationwide Aerial Application of Fire Retardant on National Forest System Land ROD (USFS 2011)
- Departmental Manual Part 620 for Wildland Fire Management
- Guidance for Implementation of Federal Wildland Fire Management Policy (USDA and USDI 2009)
- Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (USDA and USDI 2008)
- BLM Handbook H-1740-2 - Integrated Vegetation Management Handbook
- BLM Handbook H-1742-1 - Burned Area Emergency Stabilization and Rehabilitation Handbook
- President's Healthy Forests Initiative (2002)
- Healthy Forests Restoration Act (2003)
- National Cohesive Wildland Fire Management Strategy (Wildland Fire Leadership Council. 2011)
- 2001 Review and Update of the 1995 Federal Wildland Fire Management Policy (USDA and USDI 1995)
- A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy (USDA and USDI 2001b)
- A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan (USDA and USDI 2002)
- Wildland Fire Use Implementation Procedures Reference Guide (USDA and USDI 2005)
- Interagency Standards for Fire and Fire Aviation Operations (Red Book), updated annually, 2005 (USFS et al. 2013)
- San Juan BLM Wildland-Urban Interface Hazardous Fuels Reduction Programmatic Environmental Assessment (BLM 2004)
- Fire and community wildfire protection plans for Montezuma, La Plata, Archuleta, Dolores, San Juan, Mineral, Conejos, Montrose, San Miguel, Hinsdale, and Rio Grande Counties

Other standards and guidelines that pertain to fire management are found in Sections 2.3 and 2.8.

2.12 Air Quality

Introduction

Visitors to public land in southwest Colorado generally expect clear, clean air and the ability to view unobstructed vistas as part of their overall experience. Air quality is also an integral part of the natural environment and affects water quality, aquatic ecosystems, soil chemistry, snow chemistry, snowmelt processes, and vegetation.

The Weminuche Wilderness Class I Area has been designated by Congress as an "outstanding special area"—deserving the highest air quality protection in the nation. The goal is to protect natural air quality conditions (conditions substantially unaltered by humans or human activities) in the Weminuche Wilderness Class I Area. Natural conditions are measured directly through air quality monitoring and indirectly using air quality related values (AQRVs). AQRVs for the Weminuche Wilderness Class I Area are lake chemistry, soil chemistry, flora and fauna assemblages, atmospheric deposition and chemistry, snow chemistry, and visibility. Air quality monitoring commitments will continue long term, as stated in the Weminuche Wilderness Monitoring Plan (USFS 1991) and through agreements made with air quality regulatory agencies.

Several air pollutants have become major concerns on the SJNF and TRFO over the last 10 years. These include mercury, nitrogen, sulfur, methane, carbon dioxide, ozone, and ozone precursors. Many of these pollutants originate from outside the planning area. Oil and gas projects and prescribed burns and wildfire are activities that occur on the SJNF and TRFO with the potential to impact air quality. SJNF and TRFO managers will work with agencies, organizations, tribes, and other entities to actively pursue actions designed to reduce the impacts of pollutants from sources both within and outside the SJNF and TRFO. These measures will include active membership in local and regional air quality protection stakeholder groups, Prevention of Significant Deterioration (PSD) permit review, a continued commitment to air quality monitoring, and the implementation of air pollution mitigation where appropriate. Atmospheric deposition of nitrogen from anthropogenic sources is increasing and has the potential to affect water quality and aquatic and terrestrial ecosystems. Water bodies throughout the planning area are showing increasing levels of mercury pollution. Recently, McPhee and Vallecito Reservoirs were designated as impaired water bodies because of mercury contamination, and both reservoirs have consumption advisories for mercury contamination of fish (CDPHE 2012). The numerous regional coal-fired power plants are large sources of atmospheric mercury that can pollute water on the SJNF and TRFO (Wright 2011).

Fire has the potential to produce smoke that may affect the public and temporarily degrade visibility. Receptors that are sensitive to temporary air pollution (including nursing homes, hospitals, and schools) will continue to be an important consideration for smoke management. In addition, the impact of smoke on the highly valued scenic vistas within the planning area will continue to be a concern. Smoke will be managed in conjunction with the State of Colorado through burning permits and to address local concerns. Tradeoffs between short-term air quality impacts and long-term forest health are recognized and will continue to be a management challenge.

The Colorado BLM has developed a statewide Colorado Air Resource Protection Plan. The plan identifies the many components necessary for statewide air quality protection from BLM-authorized activities throughout Colorado. It includes the goals, objectives, and management actions for air quality protection. Examples of management actions include monitoring, regional air quality modeling and modeling studies, refined project analysis, emissions inventories, air pollution reduction measures, and adaptive management. It is anticipated that the Colorado Air Resource Protection Plan could provide more detailed incremental analysis that will better inform future project-level decisions (such as leasing) made as a result of this LRMP. It is also anticipated that the direction in the Colorado Air Resource Protection Plan will be modified based on implementation effectiveness. The SJNF and TRFO will utilize the direction identified in the Colorado Air Resource Protection Plan to mitigate air quality impacts and supplement the air quality management direction identified in the LRMP. The current direction identified in the Colorado Air Resource Protection Plan is part of the LRMP project record.

Additional air quality control technology and emission reductions could be necessary to achieve air quality desired conditions, as identified through future air quality modeling and monitoring. Such measures would be implemented through subsequent analysis and in consultation with affected agencies, including federal land management agencies, CDPHE and EPA.

Desired Conditions

2.12.1 Air quality in the Weminuche Wilderness Class I Area maintains natural conditions. Indicators of natural conditions include AQRVs of visibility, water and snow chemistry, precipitation/atmospheric chemistry, soils chemistry, and aquatic/terrestrial biota.

2.12.2 Air quality for the Class II areas within the planning area are maintained or improved with respect to pollutant concentrations so that human health and the integrity of associated aquatic and terrestrial ecosystem components are protected.

2.12.3 Activities conducted on the SJNF and TRFO support natural air quality conditions at nearby Class I areas outside the planning area (such as Mesa Verde National Park). Determination of what constitutes “natural conditions” will be based on information provided by managers of potentially affected Class I areas.

2.12.4 Visibility at designated scenic vistas in Class II areas is maintained or improved within the planning area (see desired conditions in Section 2.15).

2.12.5 Visibility in the Weminuche Wilderness continues to improve so that natural conditions are achieved. Activities conducted on the SJNF and TRFO do not hinder progress towards achieving natural visibility conditions in Class I areas managed by other agencies, such as Mesa Verde National Park.

2.12.6 Management activities on the SJNF and TRFO control dust in order to minimize impacts of dust-on-snow events.

2.12.7 Administrative and permitted activities on SJNF and TRFO lands emit the lowest practicable greenhouse gas emissions and have the smallest ecological footprint possible to promote sustainable natural resource management.

Objectives

2.12.8 For the Weminuche Wilderness Class 1 Area, improve air quality so that flora and fauna AQRVs that are at risk (including lichens, amphibians, and aquatic organisms) recover to a level that is within the limits of acceptable change (compared to natural conditions) by the next planning period so that there is no humanly perceptible change in visibility (visual range, contrast, coloration) from that which would have existed under natural conditions (conditions substantially unaltered by humans or human activities).

2.12.9 Over the implementation life of the LRMP on both TRFO and SJNF lands, prevent or reduce the atmospheric deposition of nitrogen and sulfur and allow no more than a 10% change from established baseline for lakes with an acid neutralizing capacity (ANC) ≥25 μ_{eq}/L, and for lakes with an ANC<25 μ_{eq}/L allow no more than 1 μ_{eq}/L decrease in ANC within agency control.

2.12.10 Over the implementation life of the LRMP, prevent or reduce airborne nutrient and mercury deposition impacts to sensitive high-elevation lakes in the Weminuche Wilderness Class I Area; allow no detectable mercury, no more than 2 μ_{eq}/L of ammonium, and no late summer nitrate.

Standards

2.12.11 All new facilities and installations must use engines that meet the following standards within a stationary facility for fluid minerals (does not apply to non-stationary drill rigs or other temporary/mobile engines). Engines less than 300 horsepower de-rated for elevation (excluding very small engines less than 40 horsepower) must not exceed a nitrogen oxide (NO_x) limit of 2.0 grams per horsepower-hour or the minimum acceptable limit as determined by air quality regulatory agencies, using whichever is the most restrictive emission limit.

2.12.12 All replacement or reconditioned reciprocating internal combustion engines less than 300 horsepower de-rated for elevation (excluding very small engines less than 40 horsepower) must not exceed a NO_x limit of 2.0 grams per horsepower-hour or the minimum acceptable limit as determined by air quality regulatory agencies, using whichever is the lower emission limit.

2.12.13 All new facilities and installations will use engines that meet the following standards within a stationary facility for fluid minerals (does not apply to non-stationary drill rigs or other temporary/mobile engines). Engines 300 horsepower or greater de-rated for elevation must not exceed a NO_x limit of 1.0 gram per horsepower-hour or the minimum acceptable limit as determined by air quality regulatory agencies, using whichever is the lower emission limit.

2.12.14 All replacement or reconditioned reciprocating internal combustion engines 300 horsepower or greater de-rated for elevation must not exceed a NO_x limit of 1.0 gram per horsepower-hour or the minimum acceptable limit as determined by air quality regulatory agencies, using whichever is the lower emission limit.

2.12.15 Green completion technology for oil and natural gas well completions and for restimulation or refracture activities during workovers is required to prevent venting and most flaring of methane gas and other air pollutants into the atmosphere. Green completion practices include, but are not limited to, 1) maximal capturing of fluids, well effluent, and flammable gases as soon as practicable during flowback and cleanout operations; 2) separation of sand, hydrocarbon and other liquids, and gas from saleable products of saleable quantity; 3) storage and delivery of saleable products to sales line; and 4) environmentally safe disposal of non-saleable waste products. Venting of flammable gas during the well completion process must not be allowed except for gas testing or for safety and emergency situations. This standard is required for all non-wildcat oil and natural gas wells and will be implemented in all places where technically feasible. (Technically feasible will be determined by the BLM and USFS, with input from air quality regulatory agencies as needed).

2.12.16 For exploration, production, transport, and processing of oil and natural gas, storage vessels must not leak and tank thief hatches must be closed when not being serviced during liquid transport, repair, or measuring activities. Valves must be maintained in a leak-free condition (<10,000 parts per million [ppm] leakage). The venting of volatile organic compounds and hazardous air pollutants emissions will achieve at least 95% emission reduction from uncontrolled emissions through the use of vapor recovery units, combustion, or other practices allowed by air quality regulatory agencies.

2.12.17 Valves and pipes in liquid hydrocarbon service must periodically (at minimum on an annual basis) be inspected visually, audibly, or by other means for evidence of leaks. If leaks are detected, equipment must either be repaired or replaced as applicable.

2.12.18 No-bleed, low-bleed, or air-driven pneumatic devices are required for all new and retrofitted oil and natural gas production sites to reduce methane emissions. Exceptions may be made for safety and operational requirements.

2.12.19 All new separators and dehydrators used for natural gas production must use 95% control efficiency or better volatile organic compound emission control technology compared to uncontrolled emissions.

2.12.20 At any one point in time, no more than four fluid mineral well pads and associated access roads will be constructed and drilled (or re-completed) with combustion engines concurrently in any given square mile. This standard does not limit the number of well pads per square mile, only the simultaneous construction and drilling of wells. This standard is necessary to minimize near-field air pollutant concentrations and ensure compliance with National Ambient Air Quality Standards (EPA 2013).

Guidelines

2.12.21 Construction activities that disturb a surface area greater than 1 acre and are of a duration greater than 5 days should use effective dust-suppression materials and techniques to prevent dust from visibly transporting from the area of disturbance (e.g., well pad, landing, parking area, mine) or drift more than 50 feet from the road prism. In addition, all activities should handle, transport, and store material in such a way to prevent particulate matter (dust) from visibly transporting from the storage area or area of disturbance. There will be no oil, solvents, or other unacceptable contaminates in fluids used for dust abatement.

2.12.22 Volatile organic compounds, hazardous air pollutants, and greenhouse gases should not be vented from existing wells and should achieve at least 95% emission reduction from uncontrolled emissions through capture and delivery to sales pipeline, vapor recovery units, combustion, or other practices allowed by air quality regulatory agencies. This would eliminate most venting from well blow-downs, during the well completion process, from oil wells freely venting casing gas, and from defective gas well-bores. Exceptions may be allowed for Bradenhead testing or other well tests where venting occurs for time periods of less than 10 minutes.

2.12.23 For new lease or new development areas, new mineral development facilities should be collocated and/or centralized. Facilities include roads, well pads, utilities, pipelines, compressors, power sources, fluid storage tanks, and other associated equipment. Collocation of wells (more than one well per pad) should be required where feasible.

2.12.24 Optimization (use of fewer, larger, and more efficient engines with lower emission rates, rather than using many small engines with higher cumulative emissions, less efficiency, and higher cumulative horsepower) should be required for fluid mineral development. For example, if new activities add an additional small engine(s) so that multiple combustion engines less than 40 horsepower each exist on the same location, the SJNF or TRFO will review the site to determine if optimization should be used to reduce total location emissions.

2.12.25 Centralized and efficient liquid gathering systems should be used to carry condensate and produced water from wells to centralized gathering facilities to reduce mobile source emissions and other traffic impacts.

2.12.26 Drill rig engines used for new or recompleted wells on the SJNF and TRFO should meet the most current non-road diesel engine rules for Tier 2, Tier 4 transitional, or Tier 4 emission standards as these standards phase in over time.

Additional Guidance

- BLM 7300, Air Resource Management, Climate and Air Quality
- FSM 2580, Air Resource Management
- FSM 5100, Fire Management
- U.S. Environmental Protection Agency (EPA) Interim Air Quality Policy on Wildlands and Prescribed Fires (1998)
- Weminuche Wilderness Monitoring Plan for Air Quality Related Values (USFS 1991)
- Federal Land Managers AQRV Workgroup Phase I Report (FLAG 2010)

2.13 Access and Travel Management

Introduction

The transportation system within the planning area consists of roads and trails that provide people with access to public lands and to private in-holdings. Virtually every activity that takes place within the planning area uses the transportation system (including outdoor recreation, wildfire management, livestock and wildlife management, natural resource development, private in-holdings access, and electronic communication site and utility corridor maintenance, as well as the management and monitoring of public lands).

There are over 3,000 miles of NFS and BLM roads and primitive roads, and more than 1,300 miles of NFS and BLM trails in the planning area that are actively managed as components of the agencies' transportation systems. Many of these roads and trails were originally constructed in order to support management activities (including for fire suppression, timber harvesting, mining, livestock grazing, and recreation). Currently, the NFS road system where motorized use is authorized for public or administrative purposes is inventoried and mapped, but inventory and mapping of unmanaged routes is incomplete. Currently, most of the roads, primitive roads and trails located on BLM lands within the TRFO have not yet been fully inventoried or mapped.

The majority of system roads are open to public use. Public use of individual roads may be allowed seasonally, or it may be permitted all year if there is a demonstrated need to provide year-round access. Some roads are reserved for administrative use by the USFS or BLM for management purposes or by permittees to access special use permit areas.

Trails generally fall into one of two general classes: non-motorized or motorized. Non-motorized trails may be further classified as non-mechanized (foot traffic, pack and saddle, etc.) and mechanized (mountain bikes). Motorized trails are generally intended for vehicles that are less than a certain specified width (usually 50 inches), which excludes most highway-legal vehicles, except motorcycles. In some cases, motorized trails may be designated for vehicles greater than 50 inches in width when there is a demonstrated need, such as providing challenging recreational opportunities for off-highway vehicles (OHVs).

In the last few decades, funding has not been sufficient to maintain all public land roads and trails to the standards associated with the maintenance classification assigned to each. Generally, the limited funding received has been focused on maintenance of higher standard roads that serve multiple-access needs and have the highest traffic volumes. Limited funding for trails has resulted in fewer miles of trails being maintained. It has also resulted in a focus on roads and trails that are deemed unsafe, those that receive the highest use, or those that present the greatest threat to ecological integrity.

Road management activities have included the decommissioning of roads, the construction of new roads, and the closure of roads. Decommissioning roads that are not needed for access (currently or in the foreseeable future) is generally performed when there is a need to reduce resource impacts through reducing runoff, re-establishing vegetation, and preventing future motorized use. Generally, new construction may occur when access to a particular resource or private in-holding is needed. These roads may be permanent, if intended for long-term use, or they may be temporary (such as many timber sale and exploratory roads). Closing roads or limiting motorized use to administrative purposes are management strategies that may be employed for a variety of reasons (including wildlife protection, resource protection, and/or public safety), and these closures may be long-term (multiple year) or seasonal. Population growth and the increased development of private in-holdings have increased the demand for use of roads within the planning area as primary access routes to residential developments. This has created a demand to establish, monitor, and administer special use authorizations and commercial road use permits. Many of these roads require upgrades in order to accommodate all-weather, year-round traffic. This demand for private land access across public lands, or by using NFS or BLM roads, has resulted in a need for the agencies to evaluate the jurisdictional status of roads that are used predominantly for residential access.

The demand for recreational motorized and non-motorized access has increased dramatically in recent years. Advances in the performance and the technology of OHVs/ATVs, utility vehicles, motorcycles, snowmobiles, mountain bikes, and wheelchairs have increased the demand for additional motorized and non-motorized recreational access and routes. New technology and increased motorized use within the planning area has resulted in some users creating new routes (also known as user-created routes or social routes). Resource problems related to these user-created routes are developing across the planning area, especially in areas that have been historically open to cross-country motorized travel.

Motorized Travel Suitability and OHV Area Designations

A key component of access and travel management is the identification of areas where motorized travel is prohibited, where it is allowed, and any use limitations in areas where it is allowed. While the BLM and USFS use very similar criteria in determining suitable locations for motorized travel, the agencies do have different processes for identifying areas where motorized travel is allowed and prohibited.

The USFS and the BLM have agency-specific direction for the management of motorized travel and OHV use. The USFS Travel Management Rule (36 CFR 212, Subparts A, B, and C) requires that each national forest designate a system of roads, trails, and areas for motor vehicle use by vehicle class and, if appropriate, by time of year. The rule addresses any future proliferation of user-created routes by prohibiting cross-country motorized travel (except in small designated areas). The BLM has similar requirements for motorized off-road use set forth in 43 CFR 8340 and 8342. While travel management plans developed under the USFS and BLM direction cited above will result in site-specific, route by route designations, this LRMP does not. Rather, the area classifications made in this LRMP provide a framework for future route-by-route designation. Some of the criteria used for the eventual designation of specific routes would include the need for access, impacts to private property, desired recreation opportunities, erosion potential and slope, resource protection, route density, and wildlife habitat considerations.

A travel management plan is not intended to provide evidence bearing on or addressing the validity of any assertion associated with Revised Statute 2477 (R.S. 2477). R.S. 2477 refers to a law passed by Congress in 1866 that provided that “the right-of-way for the construction of highways over public lands, not reserved for public uses, is hereby granted” (43 USC 932). Although the 1866 act was repealed by the FLPMA in 1976, rights associated with R.S. 2477 were preserved. R.S. 2477 rights are determined through a process that is entirely independent of the BLM’s or USFS’s LRMP planning process. Consequently, travel management planning should not take into consideration R.S. 2477 assertions or evidence. Travel management planning should be founded on an independently determined purpose and need that is based on resource uses and associated access to public lands and waters. At such time as a decision is made on R.S. 2477 assertions, the USFS or BLM will adjust its travel routes accordingly.

Travel management decisions for motorized route designations on NFS lands are illustrated on a Motor Vehicle Use Map, which is updated annually to reflect any new travel management updates. BLM route designations are illustrated on a travel map that is published in conjunction with any new travel management decision. Motorized travel off the designated roads, motorized trails or areas, or otherwise inconsistent with the designations displayed on a Motor Vehicle Use Map or BLM travel map is prohibited, unless the motorized use has been specifically exempted under USFS or BLM direction or by written authorization.

BLM Motorized Use Classifications

In accordance with definitions and criteria in 43 CFR 8340, the BLM designates OHV management areas by classifying areas as closed, limited, or open to motorized travel. Motorized travel within closed areas is prohibited; within open areas, motorized travel is allowed cross-country, and is not limited to specific roads and trails. Within areas classified as limited, motorized travel is limited to *designated* roads, primitive roads, and trails where site-specific travel management planning has occurred or, where site-specific travel management planning has not occurred, interim management limits motorized use to *existing* roads and trails.

The majority of TRFO land is currently unclassified and has not undergone site-specific travel management planning with a few exceptions. The 1985 San Juan/San Miguel RMP limited motorized travel to existing roads in the Silverton SRMA (51,180 acres), Bull Canyon (5 acres), Indian Henry's Cabin (160 acres), and Disappointment Valley (46,000 acres). The RMP also closed the Dolores SRMA (22,464 acres), Weber Mountain (4,680 acres), Menefee Mountain (4,040 acres), Perins Peak/Animas Mountain (3,200 acres), and the Dolores WSA (28,539 acres). Additionally, the Mancos-Cortez Travel Management Plan (USFS and BLM 2008) analyzed limiting motorized use to a designated system of roads and trails in the Phil's World and Mud Springs area (see Figures 2.13.3 and 2.13.4). This system of routes is carried forward under this LRMP and would further limit mechanized travel to designated routes upon completion and publication of supplemental rules in the Federal Register (see Volume III, Appendix E, Cortez SRMA, for additional guidance).

For the remainder of the TRFO (and outside of 'open' or 'closed' areas), a travel management planning process will transition management from a "limited to existing roads and trails" system to a "limited to designated roads and trails" system within 5 years of the approval of this LRMP. This process will include public involvement and will be guided by the designation criteria found in 43 CFR 8342.1. Additional limitations to travel that could be proposed may include time of day restrictions, method of travel restrictions, vehicle size restrictions, seasonal restrictions, administrative use restrictions, or other types of limitations. A number of future data needs have been identified, which include, but are not limited to:

- establishment of rights-of-way (ROWs) and easements for transportation linear features;
- inventory of existing routes and constructed feature characteristics;
- needed route improvements to facilitate access to and across public lands;
- methods and volume of use on existing routes;
- modes of travel appropriate to specific routes; and,
- resource issues.

In accordance with 43 CFR 8341.2, where OHVs are causing or will cause considerable adverse effects on soils, vegetation, wildlife, wildlife habitat, cultural resources, historical resources, threatened or endangered species, wilderness suitability, other authorized uses, or other resources, the affected areas will be immediately closed to the type(s) of vehicle causing the adverse effects until they are eliminated and measures are implemented to prevent recurrence.

Under the interim system of limiting motorized use to existing roads and trails as proposed in this LRMP, motorized use is limited to those roads and trails depicted on Figure 2.13.1, which represents the current known network of transportation linear features within the TRFO. If necessary, during the course of comprehensive travel planning, the existing route map may be updated and posted on the TRFO website (BLM 2013). Printed copies of updated existing route data will be made available at the Dolores Public Lands Office upon request. During interim management of limited areas, and in areas identified as limited to designated, the following four exceptions allow motorized vehicle travel away from existing roads, primitive roads, and trails under the circumstances specified in each. In closed areas, motorized use would be allowed under exceptions 1 and 2 only.

Exceptions:

1. Any vehicle whose use is expressly authorized in writing by the Authorized Officer (administrative access, permitted access);
2. Any fire, military, or law enforcement vehicle while it is being used for emergency purposes;
3. For purposes such as parking, turning around, or passing another vehicle;
4. Oversnow use by vehicles designed for that purpose when snow cover is adequate to protect the underlying vegetation and soils from the impacts of that use, except in:
    a. Designated (by CPW) big game severe winter relief and winter concentration areas, and
    b. Designated (by CPW) occupied Gunnison sage-grouse habitat.

In areas where route designations are completed, such as areas covered by the 1985 San Juan/San Miguel RMP and the Mancos-Cortez Travel Management Plan and following completion of route designations throughout the remainder of TRFO lands, any routes subsequently approved by the BLM will be incorporated into the designated route system.

USFS Motorized Use Classifications

For NFS lands, overground motorized suitability is divided into three classes: 1) unsuitable, 2) suitable, and 3) suitable opportunity areas. Unsuitable areas include wilderness areas and other areas that are generally not conducive to road or motorized trail system development for resource, habitat, and/or constructability reasons. Suitable areas are those that have an existing developed road and/or motorized trail system that, for the most part, serves the recreation and resource access needs of the particular area. Suitable areas would not generally be considered for net overall expansion of the transportation system. Suitable opportunity areas are those that have an existing road and/or motorized trail system, and where there is potential to improve the system by adding to the existing system of routes. Changes to the existing system (such as to address resource concerns or enhance recreation experiences) are allowed within unsuitable, suitable, and suitable opportunity areas, including the elimination or decommissioning of roads and trails. Areas with specific management (as identified in Section 3.0 of the LRMP) may have additional travel management restrictions.

A number of travel landscapes on the SJNF have not undergone site-specific overground travel management planning prior to publication of this LRMP. For these landscapes, travel suitability as depicted on Figure 2.13.1 primarily reflects current management and is subject to change through a plan amendment based on site-specific analysis that will be completed through the travel management planning process. Travel management planning will be initiated in these areas after this LRMP is finalized, and in some cases is already underway.

Oversnow motorized suitability on NFS lands is divided into two classes: 1) unsuitable and 2) suitable (see Figure 2.13.2). Suitable areas allow for oversnow travel by snowmobiles, while motorized travel is prohibited in unsuitable areas. Providing a quality outdoor recreation experience for both motorized and non-motorized recreation was a primary goal in determining suitable and unsuitable areas for motorized travel. Additionally, areas that have snow cover most years (i.e., snow availability) and areas that are accessible in the winter were considered, as well as resource considerations (such as, but not limited to, critical and severe winter wildlife habitat). Subsequent oversnow travel planning following approval of this LRMP will be necessary to implement oversnow suitable and unsuitable area boundaries as delineated in the LRMP.

Program Emphasis

Access and opportunity to experience areas through both motorized and non-motorized travel is a key component of recreation, as well as a primary management emphasis for the SJNF and TRFO. Efforts will focus on the designation of effective motorized and non-motorized travel routes over the long-term, consistent with desired conditions. Signing, enforcement, public information, and route maintenance and restoration will take place, as appropriate.

The transportation system program will emphasize a minimum transportation system that provides safe and efficient public and agency access to the public lands. Agency-specific travel management planning processes will be used to identify management opportunities for ensuring that the systems are efficiently maintained, environmentally compatible, and responsive to agency and public needs. Agency managers will work towards aligning the total miles of roads and trails within SJNF and TRFO lands with fiscal constraints. Opportunities will be sought to shift road management to the appropriate public road authority when it is determined that a specific road is primarily used for purposes other than SJNF (FRTA) access, is used for mail delivery, school bus routes, or some other local governmental purpose, or is used for year-round residential access to private property within or adjacent to SJNF.

Reconstruction and maintenance activities will focus on diminishing impacts to resources, particularly water resources and aquatic ecosystems, and improving roadway safety while reducing the backlog of deferred maintenance.

Road construction and reconstruction requirements needed to support resource development activities will be determined and evaluated at the project level. These roads will be designed and constructed to minimize surface disturbance by collocating new facilities, when feasible, and using the existing road

networks to the maximum extent possible. Roads will be constructed or reconstructed to a standard commensurate with the planned use. Design and construction BMPs will be used to minimize impacts to wildlife, water resources, aquatic ecosystems, and other resource concerns identified at the project level. Unless designated as part of the SJNF or TRFO transportation system, roads constructed for resource development will

- be temporary;
- be maintained to standard by the permittee or responsible party through written authorization;
- be decommissioned and revegetated with SJNF - or TRFO-approved native species; and
- be monitored for success for 3 years following project completion.

Travel management planning during LRMP implementation will result in the designation of a system of roads, trails, and areas for motorized use by vehicle class and season of use. The principal goal of travel management planning is to reduce the development of unmanaged roads and trails and the associated impacts to water resources and aquatic ecosystems, wildlife conflict impacts, and user conflicts. The travel management planning process aims to provide a variety of road and trail access for recreation, special uses, other forest resource management, and fire protection activities. Planning, design, and operation will seek to maximize user experience while addressing safety and resource protection needs.

Desired Conditions

2.13.1 The transportation system within the SJNF and TRFO planning area consists of roads, high-clearance or primitive roads, trails, and bridges that are fiscally sustainable and safe as appropriate for the designated use or desired user experience; they allow for the use of, and enjoyment by, the public, and they meet resource management objectives. Sufficient condition surveys and inspections are conducted to promote road safety and prioritize road maintenance expenditures.

2.13.2 The SJNF and TRFO transportation system provides reasonable and legal access for resource management and recreation; it is dynamic and adaptable to resource and user needs.

2.13.3 SJNF and TRFO destination and loop trails exist for motorized and non-motorized recreation users. New trail development within the planning area focuses on the creation of loop opportunities and when feasible, using existing routes to do so, when such use does not compromise the intent and sustainability of the route. New routes within the planning area are designed with the goals of preserving settings, complementing the landscape, and providing the desired user outcomes/benefits.

2.13.4 Public access to SJNF or TRFO lands that cross private lands and/or cross other jurisdictions is acquired, retained or improved through proper authorization and coordination with adjacent landowners.

2.13.5 The road and trail systems on the SJNF and TRFO have adequate destination signage, mapping, and route markers to assist transportation system users in navigating throughout the planning area.

2.13.6 The public has access to information about the SJNF and TRFO transportation system (including specific travel route designations, available recreational opportunities, environmental stewardship guidelines, and safe travel information).

2.13.7 Motorized use on SJNF and TRFO lands occurs only on designated roads and trails, as well as in small designated open areas (except as exempted by 36 CFR 212.51 and 43 CFR 8340). No new unauthorized or user-created routes develop within SJNF or TRFO lands. Any addition of new designated routes to the transportation system will be analyzed using the appropriate planning process and level of environmental analysis.

2.13.8 Roads and trails within the SJNF and TRFO that are identified for closure are decommissioned and re-established with native vegetation cover.

2.13.9 Roads on SJNF lands are managed by the appropriate public road authority when any one of the following conditions exists:

- the road serves predominantly non-SJNF traffic;
- the road is necessary for mail, school, and/or other local governmental purposes; or
- the road provides year-long residential access to private property within, or adjacent to, the planning area.

2.13.10 Travel management plans are complete for all SJNF and TRFO lands within 5 years of adopting this LRMP. Travel management planning remains a continuous process designed to improve the transportation system on SJNF and TRFO lands.

2.13.11 Motorized and non-motorized users, as well as local, state, tribal, and other federal agencies, are actively engaged in travel management planning, route designation and implementation, and route monitoring on SJNF and TRFO lands.

2.13.12 Transportation system components on SJNF and TRFO lands are designed, constructed, and maintained to avoid encroaching onto streams and/or onto riparian areas and wetland ecosystems in ways that impact channel fluctuation or channel geometry (the relationships between channel discharge and channel cross-sectional factors, such as area, width, and depth). Sediment delivery from the transportation system does not measurably impact pool frequency, pool habitat, and/or spawning habitats.

2.13.13 The character of roadless areas on the SJNF is maintained in order to preserve large expanses of undeveloped lands that can be managed for wildlife habitat, scenic quality, and recreation.

2.13.14 On SJNF and TRFO lands, ensure that all year-round accesses to private in-holdings are authorized by the applicable agency. Roads are upgraded by the proponent, when deemed necessary to meet SJNF or TRFO road standards for traffic type, volume, and season of use.

2.13.15 All commercial users, including timber purchasers, land stewardship contractors, and fuels management contractors, perform road maintenance commensurate with their use of SJNF NFS roads in accordance with 16 USC 537 and FSM 7732.22.

Objectives

2.13.16 On the SJNF, transfer jurisdiction of roads identified through travel management planning as having predominant use that is inconsistent with the mission of the jurisdictional managing authority to a managing authority whose mission is consistent with the road use and is willing to accept the road transfer. The SJNF will identify in each travel management planning decision those roads, if any, that are priority for jurisdictional transfer. The SJNF will seek transfer of ownership, to the appropriate managing authority, of 50% of the roads identified as priority for jurisdictional transfer through travel management decisions that are made within the first 5 years following the date of the LRMP's implementation. These jurisdictional transfers will be completed within 15 years of LRMP implementation.

2.13.17 Perform maintenance activities annually on 75% of SJNF roads maintained for passenger vehicles (NFS maintenance level 3, 4, and 5 roads).

2.13.18 Develop maintenance, monitoring, signing, and implementation plans during the comprehensive travel management planning process, using guidance provided in BLM *H-8342 – Travel and Transportation Handbook* for BLM routes (BLM 2012b). Designated routes will be assigned maintenance intensities at that time. Maintenance objectives by maintenance intensity level are described in Appendix A of BLM Manual 9113, Roads Manual (BLM 2011d).

2.13.19 Develop travel management plans in accordance with the designation criteria in 36 CFR 212, Subpart B, for NFS lands and 43 CFR 8342.1 for BLM lands. Routes that are not included in the designated motorized transportation system will be evaluated for their resource impact potential. Those with high potential for resource impacts will be prioritized for decommissioning as part of the implementation plan for each individual travel management plan decision. Each implementation plan will identify those routes prioritized for decommissioning, the method(s) that may be used, and a schedule for completion.

2.13.20 Perform the required USFS schedule of condition surveys on SJNF lands for use in prioritizing road maintenance expenditures.

Standards

Roads

2.13.21 SJNF and TRFO road construction and reconstruction must be designed and constructed in accordance with the most recent applicable agency design and construction direction, as well as applicable Federal Highway Administration adopted design standards for the corresponding transportation facility.

Temporary Roads

2.13.22 No temporary road shall be constructed on SJNF or TRFO lands prior to the development of a project-specific plan that defines how the road shall be managed and constructed. The plan must define the road design, who are the responsible parties and their roles in construction, maintenance and decommissioning, the funding source, a schedule for construction, maintenance and decommissioning, the methods(s) for decommissioning, and post-decommissioning monitoring requirements for determining decommissioning success.

Guidelines

Roads

2.13.23 On SJNF and TRFO lands, the use of motor vehicles on roads constructed for specific non-public purposes should be limited to administrative use only.

Temporary Roads

2.13.24 In order to minimize disturbance on SJNF and TRFO lands, temporary roads should be constructed to the minimum standard needed for the specific project (the minimum standard that would provide for the protection of resource values identified during the environmental analysis).

Road and Trail Maintenance

2.13.25 Road and trail maintenance investment on SJNF lands should be prioritized by a travel analysis that categorizes investment priority based on route value to public lands and loss of agency investment, as well as risk to the environment and the traveling public. The following risk categories and strategies should be used to categorize management and investments:

- **High-Value/Low-Risk Routes:** The route condition should be preserved through annual maintenance. Roads in this category that have high value for private access should be considered for transfer to the appropriate jurisdictional managing entity.
- **High-Value/High-Risk Routes:** These routes should receive first priority for investment and maintenance funding (in order for them to be restored to appropriate standard[s] and to reduce resource risks). Roads in this category that have a high

value for private access should be considered for transfer to the appropriate jurisdictional managing entity.

- **Low-Value/High-Risk Routes:** These routes should receive the highest priority in order to reduce maintenance level or maintenance intensity. Roads in this category may be considered for conversion to trails or otherwise be considered for decommissioning.
- **Low-Value/Low-Risk Routes:** These routes should receive the lowest priority for maintenance funding. Consideration should be given to converting the roads to trails. These routes should be considered for decommissioning or reduction in maintenance level or intensity.

2.13.26 On TRFO lands, maintenance intensities derived from the Roads and Trails Terminology report (BLM 1996b) should be used to guide maintenance activities.

Route Density

2.13.27 **Road Density Guideline for Water Quality and Watershed Health on SJNF Lands:** In order to protect water quality and watershed function, road densities on SJNF lands should not exceed 2 miles/square mile within any U.S. Geological Survey (USGS) 6th level Hydrologic Unit Code (HUC) watershed. In order to protect major surface source water protection areas for municipalities within USGS 6th level HUC watersheds, road densities on NFS lands should not exceed 1.5 miles/square mile. If new road construction is necessary on NFS lands within an area exceeding this density guideline, management actions should be considered that would result in post-construction road densities that are equal to or less than the pre-construction density.

The following parameters and constraints will be used to calculate road density for water quality and watershed health:

2.13.27a Roads used to develop road density calculations include those roads on NFS lands only, regardless of road ownership, that are a) open year-long or seasonally to public use and b) closed to public use, but are used for administrative access or are authorized by contract, permit, or other written authorization. Included in these calculations are NFS maintenance level 2–5 roads. Non-motorized and motorized trails and those roads that are closed to all motorized use and/or are in storage are not used for road density calculations. Temporary roads to be used for 5 years or less are not included in these calculations.

2.13.27b Road densities will be calculated within USGS 6th level HUC watersheds on NFS lands only.

2.13.27c Municipal watersheds are USGS 6th level HUC watersheds where the surface source water intake exists for an incorporated town, city, or other municipality with a public water supply. The MOU between the USFS Region 2 and the CDPHE states, “Revised Forest Plans will provide direction and desired conditions for municipal supply watersheds/source water areas to protect water quality while allowing for multiple use outputs (per 36 CFR 251.9 and FSM 2542).”

2.13.27d Data used for density calculations will be based on the best available information at the time of analysis.

2.13.28 **Road Density Guideline for Water Quality and Watershed Health on TRFO Lands:** In order to protect water quality, watershed function, major surface source water protection areas for municipalities, and to ensure compliance with the Colorado River Basin Salinity Control Act, use the best available information for determining the appropriate level of road density when analyzing and approving management actions that affect motorized routes.

2.13.29 **Road and Motorized Trail Density Guideline for Ungulate Production Areas, Winter Concentration Areas, Severe Winter Range, and Critical Winter Range on SJNF Lands:** The intent of this guideline is to ensure no net loss of existing habitat effectiveness within the areas listed below. In order to maintain wildlife habitat effectiveness of SJNF lands, road and motorized trail densities should be addressed when analyzing and approving management actions that affect motorized routes. Where management actions would result in road and motorized trail densities exceeding 1 mile/square mile on SJNF lands in the areas listed below, actions should be designed to maintain habitat effectiveness on SJNF lands throughout each mapped polygon. Habitat effectiveness for this guideline is considered maintained when road densities within the CPW mapped areas on SJNF lands listed below are less than or equal to 1 mile/square mile. When road densities exceed 1 mile/square mile within the CPW mapped areas on SJNF lands listed below, densities should not be increased without mitigation designed to maintain habitat effectiveness.

- Big game production areas (calving or lambing areas)
- Elk and deer severe winter range
- Elk and deer winter concentration areas
- Deer critical winter range

The following parameters and constraints will be used to calculate road and motorized trail density for wildlife:

2.13.29a Roads used to develop route density calculations include roads on NFS lands only, regardless of road ownership, that are a) open year-long or seasonally to public use and b) closed to public use, but are used for administrative access or are authorized by contract, permit, or other written authorization. Included in these calculations are maintenance level 2–5 NFS roads. Also included for this calculation are NFS trails that are designated for motorized use. Roads and motorized trails with design features sufficient to maintain habitat effectiveness (such as seasonal closures that are determined to be sufficient mitigation), as determined by the USFS biologist, should not be used for final density calculations. Non-motorized trails and those roads that are closed to all motorized use and/or are in storage are not used for route density calculations. Temporary roads to be used for 5 years or less are not included in these calculations.

2.13.29b Data used for density calculations will be based on the best available information at the time of analysis.

2.13.30 **Road and Motorized Trail Density Guideline for Wildlife on TRFO Lands:** In order to maintain wildlife habitat effectiveness of TRFO lands, road and motorized trail densities should be considered in the following areas when analyzing and approving management actions that affect motorized routes:

- Big game production areas (calving or lambing areas)
- Elk and deer severe winter range
- Elk and deer winter concentration areas
- Deer critical winter range

2.13.31 **Road and Motorized Trail Density Guideline for Deer and Elk General Winter Range on SJNF Lands:** Where management actions would result in road and motorized trail densities exceeding 1 mile/square mile and where CPW analysis determines that road and motorized trail densities inhibit the state's ability to meet population objectives, SJNF management actions should be designed to reduce the impacts of road density on habitat effectiveness throughout each mapped general winter range polygon. This guideline applies to the portions of each mapped general winter range polygon not covered under Guideline 2.13.29.

The following parameters and constraints will be used to calculate road and motorized trail density for wildlife:

2.13.31a Roads used to develop route density calculations include roads on NFS lands only, regardless of road ownership, that are a) open year-long or seasonally to public use and b) closed to public use, but are used for administrative access or are authorized by contract, permit, or other written authorization. Included in these calculations are maintenance level 2–5 NFS roads. Also included for this calculation are NFS trails that are designated for motorized use. Roads and motorized trails with design features sufficient to maintain habitat effectiveness (such as seasonal closures that are determined to be sufficient mitigation), as determined by the USFS biologist, should not be used for final density calculations. Non-motorized trails and those roads that are closed to all motorized use and/or are in storage are not used for route density calculations. Temporary roads to be used for 5 years or less are not included in these calculations.

2.13.31b Data used for density calculations will be based on the best available information at the time of analysis.

Additional Guidance

Guidance and Standards Applicable to NFS Roads

- FSH 2509.25, Watershed Conservation Practices Handbook
- FSH 2709.12, Road Rights-of-Way Grants Handbook
- FSM 5460, Right-of-Way Acquisition Manual
- FSH 5409.17, Rights-of-Way Acquisition Handbook
- FSM 7100, Engineering Operations Manual
- FSM 7700, Travel Management
- FSH 7709.55, Transportation Planning Handbook
- FSH 7709.56, Road Preconstruction Handbook
- FSH 7709.56b, Transportation Structures Handbook
- FSH 7709.57, Road Construction Handbook
- FSH 7709.58, Transportation System Maintenance Handbook
- FSH 7709.59, Transportation System Operations Handbook
- FSH 7100, Engineering Operations, Region 2 Supplement 7100-2006-1
- Guidelines for Bridge Design, USFS – Pacific Northwest Region (R6) Transportation Structures Group, January 2005
- USFS EM-7700-30, Guidelines for Engineering Analysis of Motorized Mixed Use on National Forest System Roads
- USFS EM 7100–15: Sign and Poster Guidelines for the Forest Service

Guidance and Standards Applicable to NFS Trails

- FSM 2300, Recreation, Wilderness, and Related Resource Management; Chapter 2350, Trail, River, and Similar Recreation Opportunities
- FSH 2309.18, Trails Management Handbook
- Motor Vehicle Route and Area Designation Guide, USFS (v.111705)

Guidance and Standards Applicable to BLM Roads and Trails

- BLM Handbook H-8342 Travel and Transportation Handbook (Public) (BLM 2012b)
- BLM Manual 9113 Roads Manual (2011d)
- BLM Handbook H-9113-1 Road Design Handbook (2011e)
- BLM Handbook H-9113-2 Roads National Inventory and Condition Assessment Guidance and Instructions Handbook (2011f)
- BLM Roads and Trails Terminology, Technical Note 422, November 2006 (BLM 2006b)
- BLM Handbook H-9115-1 Primitive Roads Design Handbook

- BLM Handbook H-9113 Primitive Roads National Inventory and Condition Assessment Guidance and Instructions Handbook
- BLM Manual MS-1626 Travel and Transportation Manual (Public) (2011g)
- BLM Manual MS -9130 Sign Manual

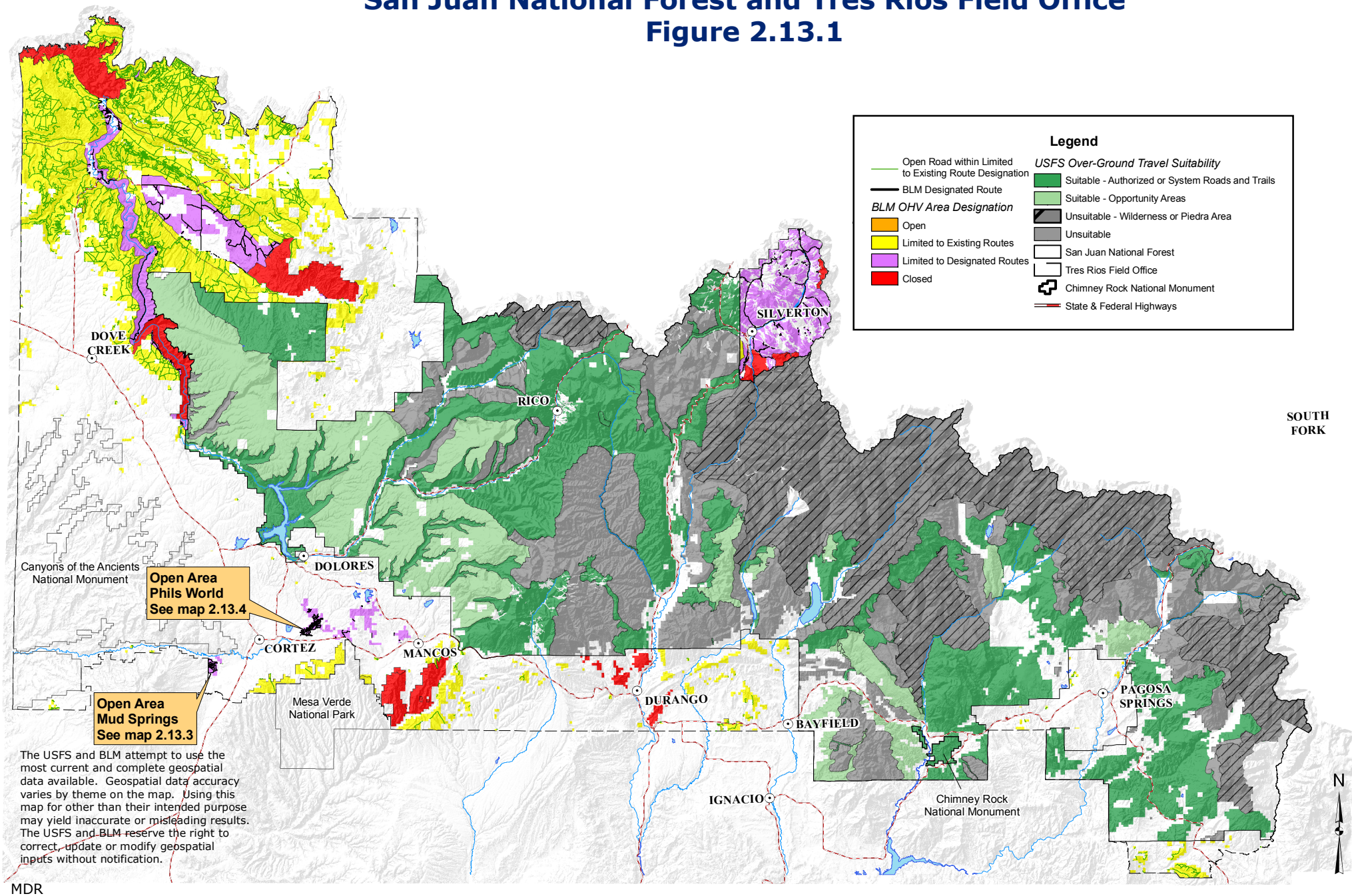
Standards Applicable to Both Agencies

- Manual on Uniform Traffic Control Devices, Part 5. Traffic Control Devices for Low-Volume Roads
- American Association of State Highway and Transportation Officials Guidelines for Geometric Design of Very Low-Volume Local Roads (Average Daily Traffic ≤ 400), current edition
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (USDI and USDA 2007)
- American Association of State Highway and Transportation Officials HB-17 Standard Specifications for Highway Bridges, current edition

Over-Ground Travel Suitability and OHV Area Designations

San Juan National Forest and Tres Rios Field Office

Figure 2.13.1


Legend
Open Road within Limited to Existing Route Designation
BLM Designated Route
BLM OHV Area Designation
Open
Limited to Existing Routes
Limited to Designated Routes
Closed
USFS Over-Ground Travel Suitability
Suitable - Authorized or System Roads and Trails
Suitable - Opportunity Areas
Unsuitable - Wilderness or Piedra Area
Unsuitable
San Juan National Forest
Tres Rios Field Office
Chimney Rock National Monument
State & Federal Highways
DOVE CREEK
SILVERTON
RICO
SOUTH FORK
Canyons of the Ancients National Monument
Open Area
Phils World
See map 2.13.4
DOLORES
CORTEZ
MANCOS
Open Area
Mud Springs
See map 2.13.3
Mesa Verde National Park
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
June 11, 2013

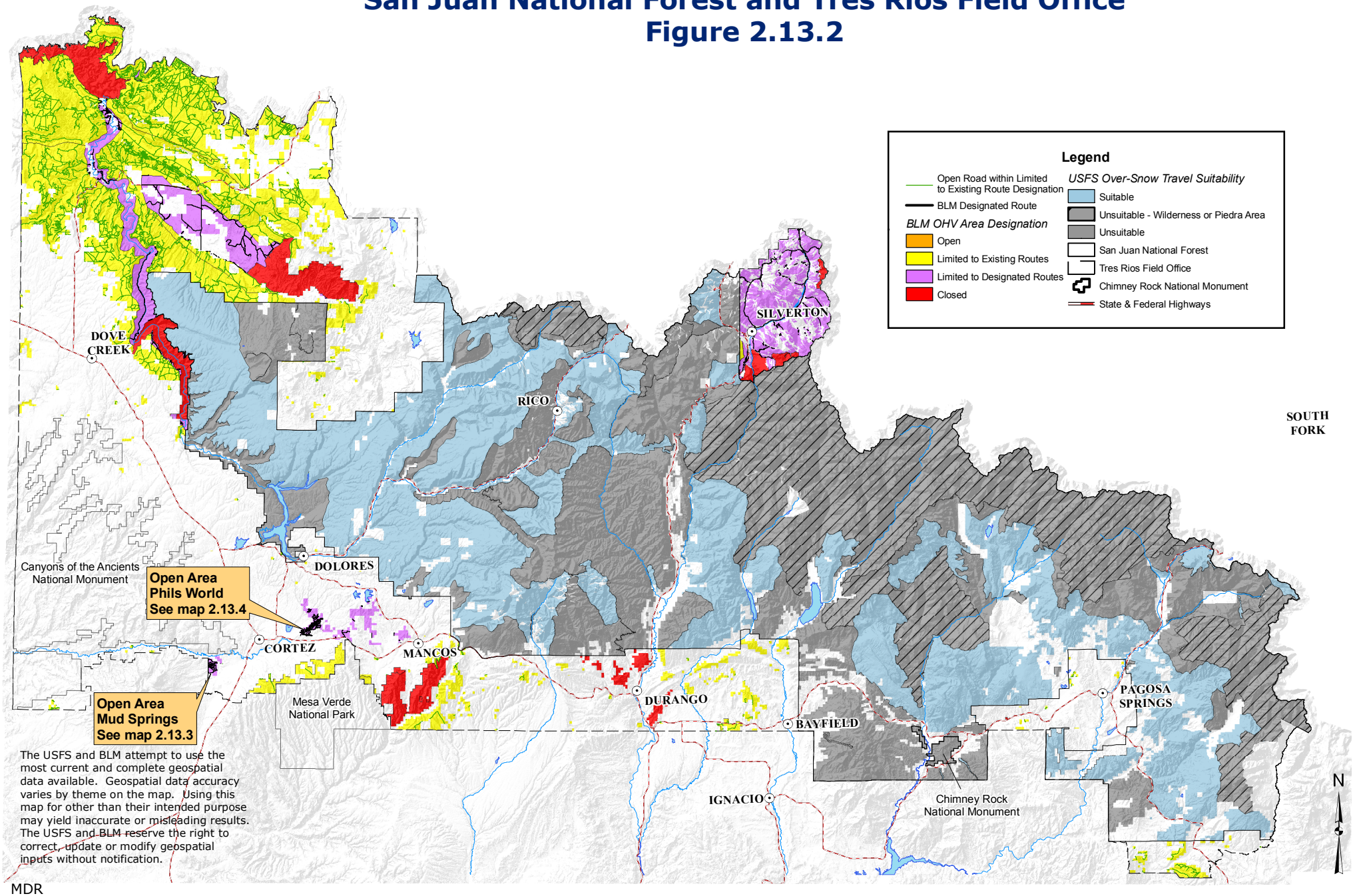
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Over-Snow Travel Suitability and OHV Area Designations

San Juan National Forest and Tres Rios Field Office

Figure 2.13.2


Legend
Open Road within Limited to Existing Route Designation
BLM Designated Route
BLM OHV Area Designation
Open
Limited to Existing Routes
Limited to Designated Routes
Closed
USFS Over-Snow Travel Suitability
Suitable
Unsuitable - Wilderness or Piedra Area
Unsuitable
San Juan National Forest
Tres Rios Field Office
Chimney Rock National Monument
State & Federal Highways
DOVE CREEK
SILVERTON
RICO
SOUTH FORK
Canyons of the Ancients National Monument
Open Area Phils World See map 2.13.4
DOLORES
CORTEZ
MANCOS
Mesa Verde National Park
Open Area Mud Springs See map 2.13.3
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
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MDR
NAD 83, Polyconic Projection
June 11, 2013

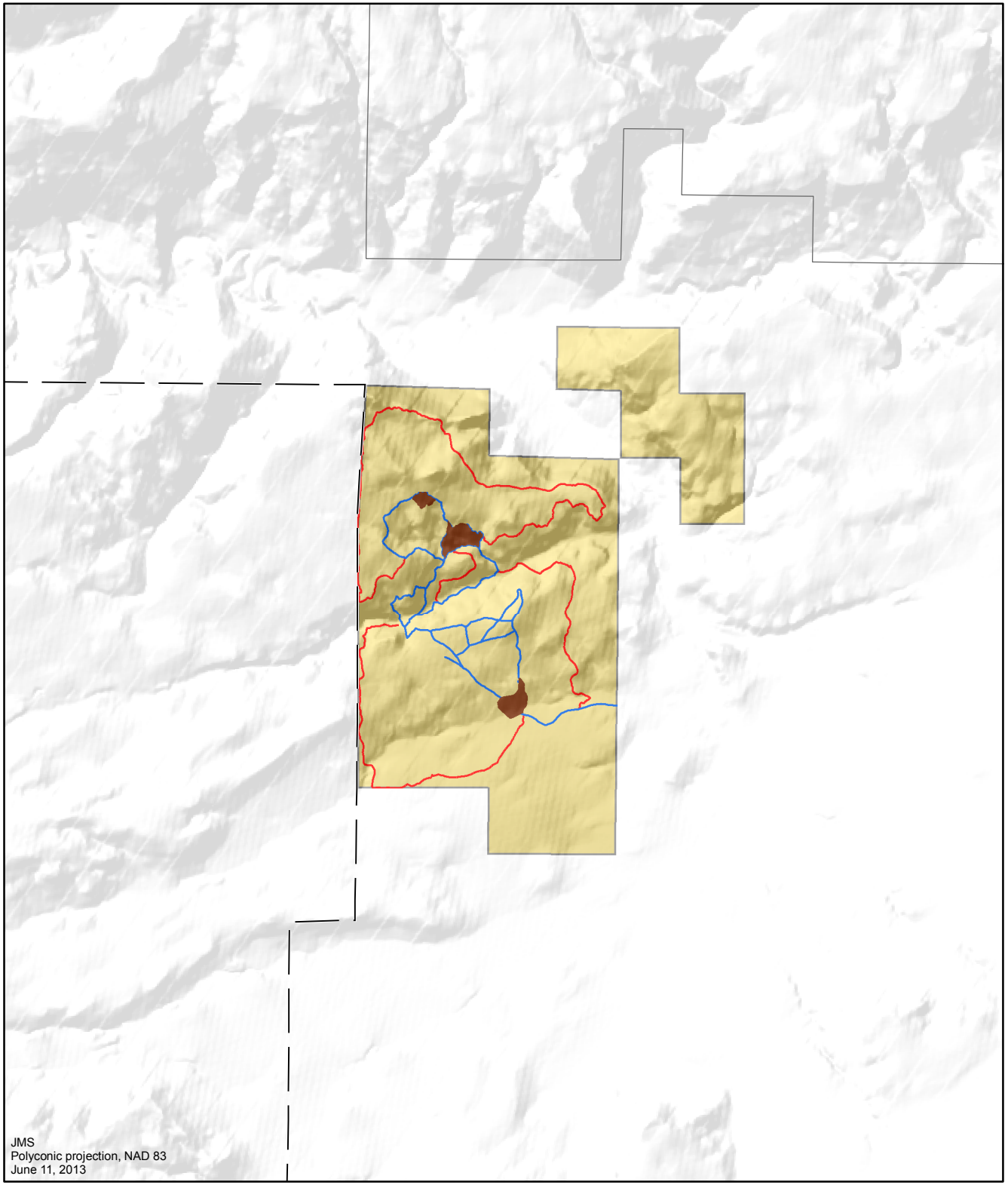
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Mud Springs Designated Routes

Tres Rios Field Office

Figure 2.13.3



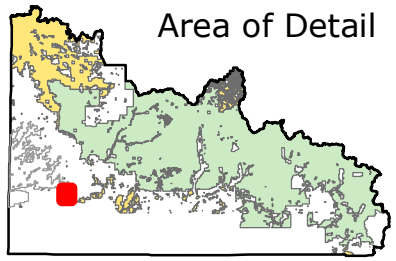
Legend

- Rock Crawler and ATV
- Mechanized
- Open Area
- Bureau of Land Management
- National Forest

Miles

0 0.25 0.5 1

Area of Detail



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The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

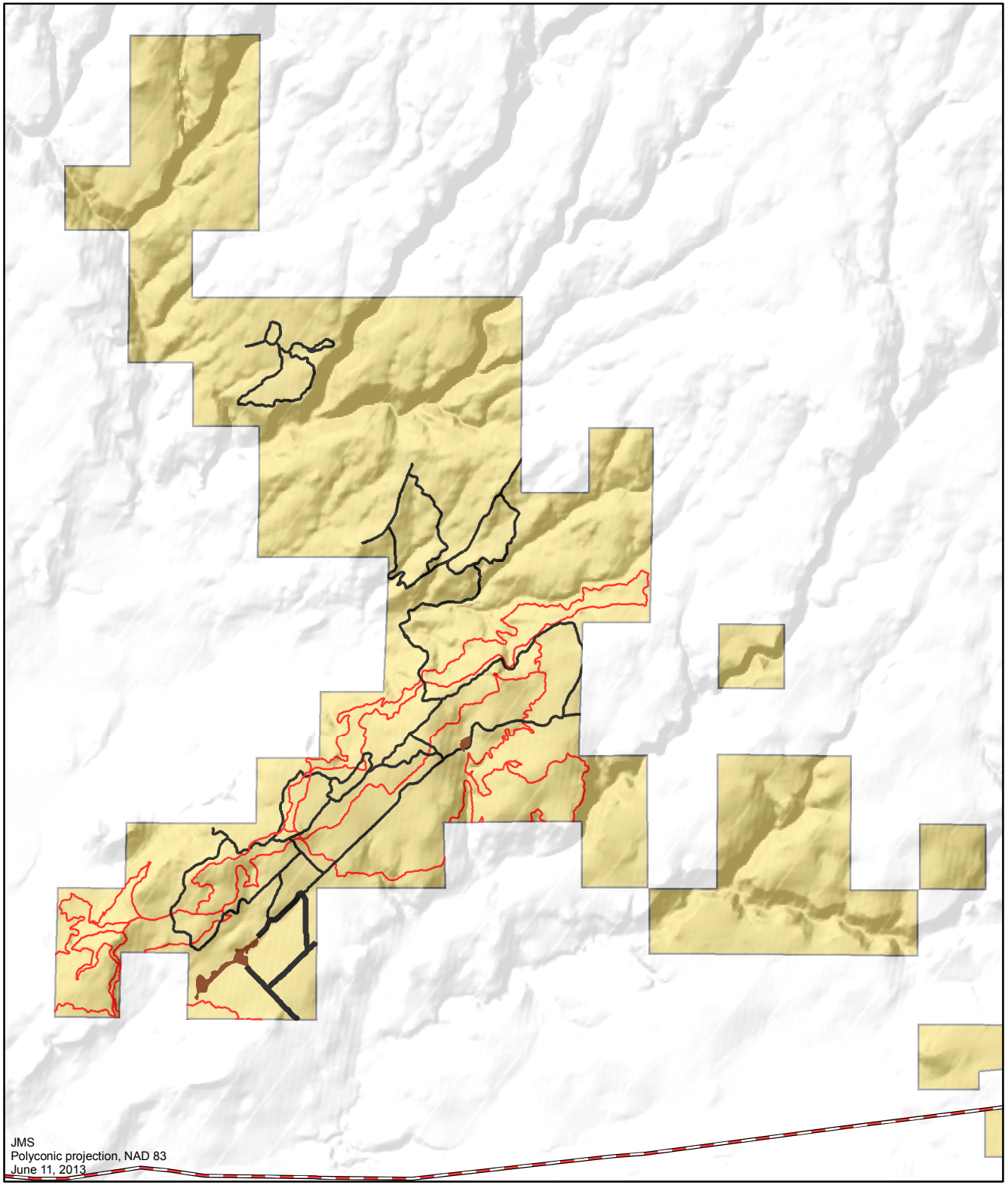
JMS
Polyconic projection, NAD 83
June 11, 2013

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Phil's World Designated Routes

Tres Rios Field Office

Figure 2.13.4



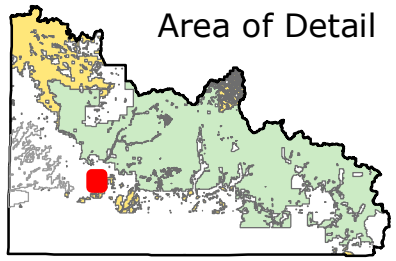
Legend

- Full-Size Vehicle
- OHV 50 in. or less
- Mechanized
- State & Federal Highways
- Open Area
- Bureau of Land Management
- National Forest

Miles

0 0.25 0.5 1

Area of Detail



N

The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JMS
Polyconic projection, NAD 83
June 11, 2013

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

2.14 Recreation

Introduction

The SJNF and TRFO offer visitors and local area residents extraordinary opportunities to experience the benefits of their public lands. Local and regional economies depend on the recreation market, which is heavily influenced by the opportunities available on the public lands. Visitors value the unique and outstanding recreational assets offered by the SJNF and TRFO. The “backyard” or rural recreation setting provided by many of these lands is an amenity to the active lifestyles and quality of life for local residents.

Visitors to the SJNF and TRFO have an impressive range of options for experiencing the area. Past mining, logging, and grazing uses have created an extensive transportation network across the planning area that provides for various forms of access to the public lands. In contrast, the large extent of rugged mountains and canyons with limited roads and access offer vast undeveloped areas offering their own unique recreation opportunities. The planning area offers a wide range of settings that provide opportunities for solitude and personal challenge, as well as developed front-country settings. Local communities, partners, volunteers, and permit holders are involved in (and benefit from) providing recreation opportunities, and recreation benefits contribute significantly to the economy and culture of local communities.

SJNF and TRFO lands have remarkable values related to cultural traditions, history, scenery, and environmental resources and ecosystems. These values help to define a sense of place and provide a unique recreation market and identity for the SJNF and TRFO. Public lands within the planning area offer people resource-dependent recreation opportunities and settings in which to meaningfully experience nature, history, and culture.

The recreation management focus of the SJNF and TRFO is to ensure the continued availability of resource-dependent outdoor recreation experiences that are suitable for the landscape and that are not readily available from other public or private entities. The SJNF and TRFO recreation programs will emphasize the extraordinary natural, cultural and scenic resource values of the planning area and effectively manage the high public demand. The program will consider the proximity of the planning area to growing communities and recognize the need for public understanding of their stewardship role upon the SJNF and TRFO.

The SJNF and TRFO will provide place-based recreation management by focusing on activities and unique settings for which an area is best suited. Recreation suitability (derived through the Recreation Opportunity Spectrum [ROS]) will guide the direction of recreation management within the planning area. In combination with SRMAs, the ROS will guide recreation management with regard to access, intensity of visitor management, social encounters, naturalness, built environment, and carrying capacity.

Remote Areas and Wilderness

This program area primarily focuses on monitoring and addressing activities that have the potential to degrade values related to wilderness areas, WSAs, and other primitive or remote areas within the planning area. Protection and restoration of natural conditions will continue to be important within these areas (see Chapter 3 for additional wilderness area information).Wilderness management direction contained in the San Juan-Rio Grande National Forests Wilderness Management Direction (USFS 1998a) is incorporated by reference into this LRMP and will continue to be in effect.

Marketing

A cornerstone of successful management will be developing and providing effective public information about recreation opportunities and settings on the SJNF and TRFO. Targeted marketing efforts can boost the likelihood that people could more easily find and participate in their desired recreation activities within the planning area. Marketing will also help to increase appropriate uses in underused areas while, at the same time, relieving conflicts and impacts on overused places. Marketing venues will be varied and

include the use of maps, guidebooks, the internet, information signs, brochures, and other marketing tools. Interpretive signing (existing and future) will also contribute to visitors' understanding and enjoyment of their surroundings while visiting the SJNF and TRFO.

Recreation Facilities

SJNF and TRFO managers will continue to assess the future of SJNF and TRFO recreation facilities in order to establish a program that is balanced, sustainable, realistic, and responsive to public needs. Services will be provided with allocated funds, revenues, and partnerships. Managers will also seek other creative methods in order to maximize public benefits. Facilities will be redesigned, as necessary, in order to benefit a larger and more diverse audience and address demographic changes. New large-scale facilities are not anticipated during this planning cycle. Emphasis will be placed on the maintenance and improvement of existing developed facilities and on protection of resource issues in dispersed recreation areas.

Communities and Partners

Local communities and partners have strong ties with SJNF and TRFO lands. These communities and partners have become ever more critical in helping SJNF and TRFO managers address complex resource management situations, declining recreation budgets, and meeting the demands of growing communities that seek to benefit economically from recreation and tourism on SJNF and TRFO lands. Efforts in this area will focus on building partnerships with communities interested in protecting and enhancing public land recreation access while sustainably using the SJNF and TRFO for their economic, scenic, and recreation benefits. This includes use of scenic byways and the abundant heritage resources readily accessible from the San Juan Skyway.

Travel Corridors

Three scenic and historic byways (San Juan Skyway, Alpine Loop, and Trail of the Ancients) and numerous lesser known routes provide for adventure and exploration of national and regional interest. In particular, historic mining, ranching, and views of rugged wilderness are easily enjoyed by thousands each year. These routes provide an important and effective interface between visitors and the public lands.

Recreation management will protect and enhance opportunities for viewing scenery and cultural resources along these travel corridors. Most visitor service developments will occur along these corridors. These travel corridors will serve as "information gateways" and facilitate access to more remote areas of the SJNF and TRFO. Partnerships and grants will be a primary method for achieving objectives related to these travel corridors. See Chapter 3 of the LRMP for additional information on byways and scenic corridors.

Dispersed Recreation Experiences

Dispersed recreation will continue to be an important benefit offered within the planning area. Dispersed recreation includes both day and overnight use and provides important recreational benefits, which include the opportunity to enjoy natural landscapes, escape from crowds, engage in physical exercise, and/or recreate with family and friends. The management of these benefits will seek to balance the strong desire people have for freedom of choice regarding recreation activities, while providing for adequate protection of cultural and natural resources and the need to manage conflicting recreation uses. In spite of the large expanse of undeveloped areas available for dispersed recreation use, not every acre is suitable for every use. Management planning must balance the competing recreational uses with resource protection.

Recreation Opportunity Spectrum

The ROS offers a framework that establishes recreational settings (based on access, remoteness, naturalness, built environment, social encounters, visitor impacts, and management) within the planning area. The resulting recreation zones are shown on the "ROS Settings Maps," with separate maps for summer and winter activities (see Figures 2.14.2 and 2.14.3). The ROS zones for the various alternatives are presented in Volume III, Appendix E. These maps show broad desired setting conditions for the entire planning area; therefore, site-specific analysis is generally necessary in order to further refine desired setting conditions that may apply to site-specific projects. Additional management direction related to recreation setting prescriptions is found under Guidelines, below. See the Glossary for ROS term definitions.

The BLM uses the Recreation Setting Characteristics Matrix, which parallels the concept of the USFS ROS settings. The BLM system allows for customization (splitting, adding, deleting, and renaming of classes), but requires the spectrum concept to remain intact. The Recreation Setting Characteristics Matrix classifies the settings as primitive, back country, middle country, front country, rural, and urban, broken out into physical, social, and operational components. Setting prescriptions for a unit can mix and match between the setting components. For instance, an area can have a backcountry physical setting prescription and a front country social prescription. For purposes of consistency, USFS ROS setting descriptions will generally be used in this document, though prescriptions set forth for SRMAs in Volume III, Appendix E and Recreation Area Management Plans (RAMPs) tiering to this document will use the BLM terminology.

Future recreation management and development decisions on lands managed by the USFS will be guided by the ROS settings map and by both the ROS settings map and the Recreation Setting Characteristics Matrix on BLM lands.

Table 2.14.1: Bureau of Land Management Recreation Setting Characteristics Matrix

	Primitive Classification	Back Country Classification	Middle Country Classification	Front Country Classification	Rural Classification	Urban Classification
PHYSICAL COMPONENT – Qualities of the Landscape						
Remoteness (approx. distance from routes)	More than 0.5 mile from either mechanized or motorized routes.	Within 0.5 mile of mechanized routes.	Within 0.5 mile of four-wheel drive vehicle, ATV and motorcycles routes.	Within 0.5 mile of low-clearance or passenger vehicle routes (includes unpaved county roads and private land routes).	Within 0.5 mile of paved/primary roads and highways.	Within 0.5 mile of streets and roads within municipalities and along highways.
Naturalness (landscape texture form, line, color)	Undisturbed natural landscape.	Natural landscape with any modifications in harmony with surroundings and not visually obvious or evident (e.g., stock ponds, trails).	Character of the natural landscape retained. A few modifications contrast with character of the landscape (e.g., fences, primitive roads).	Character of the natural landscape partially modified but none overpower natural landscape (e.g., roads, structures, utilities).	Character of the natural landscape considerably modified (agriculture, residential or industrial).	Urbanized developments dominate the landscape.
Facilities	No structures. Foot/horse and water trails only.	Developed trails made mostly of native materials such as log bridges. Structures are rare and isolated.	Maintained and marked trails, simple trailhead developments and basic toilets.	Rustic facilities such as campsites, restrooms, trailheads, and interpretive displays.	Modern facilities such as campgrounds, group shelters, boat launches, and occasional exhibits.	Elaborate full-service facilities such as laundries, restaurants, and groceries.
SOCIAL COMPONENT – Qualities Associated with Use						
Contacts (avg. with any other group)	Fewer than 3 encounters/day at camp sites and fewer than 6 encounters/day on travel routes.	3–6 encounters/day off travel routes (e.g., campsites) and 7–15 encounters/day on travel routes.	7–14 encounters/day off travel routes (e.g., staging areas) and 15–29 encounters/ day on travel routes.	15–29 encounters/day off travel routes (e.g., campgrounds) and 30 or more encounters/day on travel routes.	People seem to be generally everywhere.	Busy place with other people constantly in view.
Group Size (average - other than your own)	Fewer than or equal to 3 people per group.	4–6 people per group.	7–12 people per group.	13–25 people per group.	26–50 people per group.	Greater than 50 people per group.
Evidence of Use	No alteration of the natural terrain. Footprints only observed. Sounds of people rare.	Areas of alteration uncommon. Little surface vegetation wear observed. Sounds of people infrequent.	Small areas of alteration. Surface vegetation showing wear with some bare soils. Sounds of people occasionally heard.	Small areas of alteration prevalent. Surface vegetation gone with compacted soils observed. Sounds of people regularly heard.	A few large areas of alteration. Surface vegetation absent with hardened soils. Sounds of people frequently heard.	Large areas of alteration prevalent. Some erosion. Constantly hear people.

	Primitive Classification	Back Country Classification	Middle Country Classification	Front Country Classification	Rural Classification	Urban Classification
OPERATIONAL COMPONENT – Conditions Created by Management and Controls over Recreation Use						
Access (types of travel allowed)	Foot, horse, and non-motorized float boat travel.	Mountain bikes and perhaps other mechanized use, but all is non-motorized.	Four-wheel drives, all-terrain vehicles, dirt bikes, or snowmobiles in addition to non- motorized, mechanized use.	Two-wheel drive vehicles predominant, but also four wheel drives and non-motorized, mechanized use.	Ordinary highway auto and truck traffic is characteristic.	Wide variety of street vehicles and highway traffic is ever-present.
Visitor Services (and information)	No maps or brochures available on-site. Staff rarely present to provide on-site assistance.	Basic maps, staff infrequently present (e.g., seasonally, high use periods) to provide on-site assistance.	Area brochures and maps, staff occasionally (e.g., most weekends) present to provide on- site assistance.	Information materials describe recreation areas & activities, staff periodically present (e.g., weekdays and weekends).	Information described to the left, plus experience and benefit descriptions, staff regularly present (e.g. almost daily).	Information described to the left, plus regularly scheduled on-site outdoor demonstrations and clinics.
Management Controls	No on-site posting/signing of visitor regulations, interpretive information or ethics. Few use restrictions.	Basic user regulations at key access points. Minimum use restrictions.	Some regulatory and ethics signing. Moderate use restrictions. (e.g., camping, human waste).	Rules, regulations and ethics clearly posted. Use restrictions, limitations, and/or closures.	Regulations strict and ethics prominent. Use may be limited by permit, reservation, etc.	Enforcement in addition to rules to reduce conflicts, hazards, and resource damage.
NOTE: This matrix can be customized to meet particular planning needs: 1) classes can be added, split, or merged; 2) characteristics can be added or deleted; 3) class names can be changed; and 4) the text can be modified. However, the concept of a spectrum must remain intact.						

Primitive ROS Settings: Primitive ROS settings include Congressionally designated wilderness areas, BLM WSAs, and areas recommended to Congress for designation as wilderness. In general, these areas are 5,000 acres or larger and are affected primarily by the forces of nature. They offer opportunities for solitude, natural quiet, and unconfined recreation for non-motorized and non-mechanized travel year-round. Decisions made under the 1998 Wilderness Management Direction amendment to the 1983 LRMP continue to be valid and are incorporated into this LRMP by reference. Wilderness lands are categorized into three settings that describe the relative naturalness and level of remoteness of the area: 1) unspoiled pristine lands, 2) unmodified primitive lands, and 3) concentrated use, semi-primitive lands. WSAs will be managed by the BLM Interim Management Guidelines until Congress acts to create wilderness or releases those lands from consideration.

Semi-Primitive ROS Settings: Semi-primitive ROS settings are non-wilderness lands characterized by a predominantly naturally appearing landscape with significant opportunities for non-motorized, primitive forms of recreation. Concentrations of users are low. Opportunities are provided that allow visitors to have a high degree of interaction with the natural environment, as well as a sense of remoteness, quiet, and solitude. Trail systems are designed in order to provide challenge and opportunities for self-reliance. Semi-primitive ROS settings can be motorized, mechanized, or non-motorized. Administrative actions and commercial uses (including recreation) occur; however, they are not common.

Roaded Natural ROS Settings: These settings are characterized by a higher degree of development and human “footprint” than those of primitive and semi-primitive. Sights and sounds of human activity are common, as are encounters with other recreational users. Users should also expect the presence of active management activities, areas of adjacent and/or interspersed private lands and development, an extensive trail network, intensively developed recreation sites, and abundant access points for recreational activities. Commercial uses can be common in these areas.

Rural ROS Settings: These settings are uncommon within the SJNF and TRFO and are almost entirely adjacent to existing urban development. Sights and sounds of human activities dominate the setting, and visitors can expect numerous encounters with other users and types of users when in these areas. Examples of things expected to be encountered in these areas include utility lines/corridors, paved roads, nearby residential/commercial development, developed ski areas, recreation residences, and a variety of motorized and non-motorized users, among others.

Special Recreation Management Areas

There are four SRMAs within the planning area on BLM lands (Silverton, Dolores River Canyon, Cortez, and Durango) (Figure 2.14.1). SRMAs have been identified by the public as important places for various types of recreation within distinct landscape settings and have distinct recreation markets and recreation niches. The types of users, their activities, and specific recreation benefits are identified for each of the SRMAs, and these factors influence the management of the individual areas. BLM policy requires that each SRMA have a distinct boundary and map, that a RAMP be developed and approved for each SRMA, and furthermore that recreation management is to be the predominant focus of land management in that area. See Volume III, Appendix E for a more comprehensive description of these four areas.

On BLM lands, areas not identified as SRMAs are generally managed for other resource values, although recreational uses are generally allowed when they are compatible with a given area’s other resource uses.

Desired Conditions

Recreation

2.14.1 Activities are regulated primarily in order to protect the quality of the recreation settings and benefits, as well as to protect natural and cultural resources. Managers monitor conditions and implement management strategies in order to maintain desired setting characteristics.

Recreation users have opportunities to benefit from the diversity of varied terrain, scenery, and nature in the canyons, mountains, and mesas, as well as on the rivers of the SJNF and TRFO.

2.14.2 Established road and trail travel corridors offer high-quality scenery. Developed recreation facilities (including trailheads) provide relatively easy access for visitors, enabling them to enjoy a wide range of recreation experiences.

2.14.3 The recreation market emphasizes resource-dependent recreation settings, services, and conditions that offer the benefit of interaction between people and their natural and cultural public land heritage. With the exception of ski areas, highly developed facilities (including guest lodges, waterslides, golf courses, etc.) are not located on public lands within the planning area.

2.14.4 Recreation management is guided by recreation setting prescriptions established by the ROS maps, as well as by other resource goals and objectives. Although recreation opportunities are extensive throughout the planning area, there may be some areas where no recreation is appropriate.

2.14.5 Recreation tourism provides economic and social benefits to local communities and to the region; this is consistent with sustainable land practices, the protection of sense of place, and the market demand for SJNF and TRFO-related values. The USFS and BLM collaborate with local communities, educational institutions, businesses, non-profit organizations, volunteers, and others interested in the planning area in order to market recreation opportunities effectively and appropriately, consistent with USFS and BLM goals.

2.14.6 Public access to SJNF and TRFO lands near communities provide a day-to-day lifestyle connection with the foothills, canyons, and mountains. Neighborhood trailheads and convenient access points provide quick entry to a natural setting. These lands are a community asset and help contribute to a healthy lifestyle for people of all ages.

2.14.7 The SJNF and TRFO offer motorized and non-motorized recreation experiences in large, predominantly naturally appearing landscapes, where active management may occur. Primitive dispersed camping sites, developed campgrounds, and trailheads are present in order to support dispersed recreation use.

2.14.8 Overground and oversnow motorized travel maps serve as guidelines for determining recreation travel within the planning area.

2.14.9 A wide variety of information, education, and interpretive venues about recreational opportunities are available through various media and resources. Interpretive and volunteer efforts are focused on attaining agency goals and objectives.

2.14.10 Adequate maintenance and services at some sites are sustained through the collection of fees and donations, as well as through the work of concessionaires, volunteers, and partnerships.

2.14.11 Trailheads only provide the minimal level of amenities, as appropriate for the setting and sufficient to protect the resources.

2.14.12 On SJNF lands, trails within MA 7 (public and private lands intermix) are constructed and maintained primarily through community partnerships.

Recreation Opportunity Spectrum

2.14.13 Projects and activities are consistent with the established ROS settings.

2.14.14 Much of the planning area has an ROS setting of semi-primitive and roaded natural.

2.14.15 A network of roads maintained for low-clearance passenger vehicles provides access through roaded natural ROS settings and provide access to extensive semi-primitive ROS settings. Beyond these well-traveled road corridors, contact frequency between visitors is less, secondary roads are more rugged and challenging with numerous 4 × 4 routes, visitor facilities are rare, and the sights and sounds of nature predominate.

2.14.16 Primitive ROS settings are maintained at their current level of naturalness or restored, as needed.

2.14.17 Primitive ROS and semi-primitive ROS areas provide a variety of recreational opportunities, including:

- High-quality, resource-dependent recreation accessible from major travel corridors;
- Single- and multi-day challenging recreation activities and adventures;
- Non-motorized and motorized scenic backcountry experiences; and
- Self-discovery and challenge in areas with pristine natural conditions and solitude.

2.14.18 Roaded natural ROS areas provide a variety of recreational settings and activities, including:

- Motorized activities such as driving for pleasure and OHV use on designated trails and areas;
- A moderate to high degree of interaction and encounters with other users; and
- Sights and sounds of human development are evident but do not dominate users' experiences.

2.14.19 New trail construction in primitive and semi-primitive ROS settings protect resources, enhance recreation experience/challenge, mitigate user conflicts, and/or provide loops and/or links to other trail networks.

Dispersed Recreation

2.14.20 Dispersed recreation is an important opportunity offered throughout the planning area and occurs extensively. Facilities for dispersed recreation are minimal and are provided in order to protect resources and enhance recreation experiences (and are compatible with established ROS settings, opportunities, and benefits). Access and parking, regulations, orientation, and safety information are provided only to the degree needed to protect resources and appropriately manage existing or anticipated uses.

2.14.21 Commercial outfitting/guiding is often provided within dispersed recreation areas in order to provide the expertise and equipment necessary for visitor safety, resource protection, and quality recreation experiences.

2.14.22 Dispersed camping opportunities are available for a wide variety of users. Motorized access to dispersed camping opportunities is addressed through travel management planning. Any new dispersed campsites are to be located outside riparian zones and other sensitive resource areas. Campsites may be closed, repaired, rehabilitated, and/or hardened when unacceptable environmental or social impacts occur. Dispersed recreation resulting in resource impacts or user conflicts is effectively addressed.

2.14.23 Dispersed camping does not interfere or conflict with the operation of developed campgrounds.

2.14.24 Effective parking and directional/information signing is in place in order to support sustainable dispersed recreation use.

2.14.25 Recreation is managed within the limits of ecosystem and species capacity for long term health and sustainability.

Developed Recreation

2.14.26 Developed recreation sites meet accessibility standards and are consistent with the established recreation niche of the area. The scale of development and amenities at facilities and at sites is consistent with established ROS and identified markets. The ROS setting for most developed facilities is roaded natural or rural. Trailheads are available in a range of ROS settings.

2.14.27 Developed recreation facilities are maintained to required standards. In particular, facilities that do not meet public health and safety standards are reconstructed, closed, or decommissioned in a timely manner.

2.14.28 In developed recreation sites, the USFS and BLM provide a wide range of visitor information, education, and interpretation consistent with their interpretive and conservation education strategy.

2.14.29 Vegetation and fuels management actions within, and adjacent to, developed recreation sites maintain or enhance scenery and meet specific-site plan objectives (including privacy screening, fall color enhancement, and disease resistance).

2.14.30 Recreation sites and facilities are designed with an architectural theme intended to blend facilities with the natural environment. For new construction or site improvements, methods of construction use locally available resources and Leadership in Energy and Environmental Design (LEED) guidelines to the extent possible.

2.14.31 Developed recreation sites are withdrawn from locatable mineral entry.

Winter Recreation

Winter recreation opportunities within the planning area provide important benefits to local residents and visitors. A variety of local and state partners (including both for-profit and not-for-profit) assist the USFS and BLM in managing both motorized and non-motorized winter recreation areas. Commercial outfitters/guides also offer an important service related to safe winter recreation.

2.14.32 Winter recreation access is provided via plowed roads managed as roaded natural ROS settings. Trailhead parking areas are developed at key concentration points in order to accommodate the loading and unloading of equipment and people. Safety, regulatory, and orientation information is provided at these locations.

2.14.33 Away from primary road access points, winter activities fall primarily within the ROS categories of semi-primitive non-motorized or semi-primitive motorized.

2.14.34 Winter non-motorized areas provide a variety of non-motorized recreation opportunities in a quiet, natural setting (including groomed and un-groomed snow). Noise from motorized use is less common in areas away from the main road corridors.

2.14.35 Winter motorized areas are managed in order to provide a variety of motorized recreation opportunities with a variety of challenge. In addition to areas open to cross-county, oversnow motorized use, these areas may contain groomed trails, marked trails that are not groomed, and/or unmarked/unmaintained open trails.

2.14.36 Timing restrictions for motorized oversnow recreational use may be employed in wildlife habitat areas or due to ground conditions.

2.14.37 Motorized oversnow travel should only occur when snow levels are adequate to protect the ground surface from disturbance due to snow machine use. For SJNF lands, 12-inch snow depth will be used as the standard, and BLM will use criteria found in Section 2.13, Access and Travel Management, of the LRMP.

2.14.38 Winter motorized use is not allowed within protected areas (see Section 2.13).

Ski Areas

2.14.39 Ski areas are developed, maintained, and operated by the permitted private enterprises.

2.14.40 Ski areas on SJNF lands are characterized by a vegetation mosaic that includes natural and human-made grassy openings intermixed with forested and/or partially forested areas and rocky outcroppings. Forested areas provide sustainable cover with a variety of species and age classes in patterns typical of the area's natural landscape character. These areas are not part of the scheduled timber production base. Vegetation management (which may include herbicides, commercial harvesting, and/or grazing) is used in order to achieve and maintain desired conditions for the ski area in a sustainable manner. Vegetation conditions are manipulated to reduce the potential hazards and risks of undesirable changes from wind throw, insects, disease, and/or fire.

Ski areas on TRFO lands (Silverton Mountain) are characterized by primarily unmodified vegetation and terrain, appear natural in appearance, and are valued for their resource-dependent recreational opportunities.

2.14.41 Recreation is intensively managed year-round at ski areas. Facilities directly support recreational activities and management. Winter terrain parks within ski areas are concentrated in specific locations, rather than dispersed throughout the mountain. New trail developments are generally for non-motorized recreation uses. Permittees are responsible for the design, construction, safety, maintenance, and management of agency-approved facilities/trails within their permit area.

2.14.42 Motorized travel within permitted ski areas, in both winter and summer, is generally limited to administrative or emergency purposes. Summer uses in ski areas within the planning area favor non-motorized, low-impact activities (including sight-seeing, hiking, wildlife viewing, and mountain biking) that require few permanent structures.

2.14.43 Scenery provides a range of scenic integrity objectives from low to moderate. Protection of scenic values is emphasized through basic landscape design principles.

2.14.44 Where feasible and desirable, backcountry skiing, snowshoeing, and/or snowboarding activities may be facilitated or enhanced by visitor services at established ski areas.

2.14.45 Visitors are aware, through signs and interpretive venues, that the ski area is public land.

Recreation Special Uses

Recreation special use permits/special recreation permits are issued in order to provide a variety of safe high-quality recreation opportunities to visitors and provide fair return to the United States for commercial recreation use of federal lands. Local outfitters/guides and other recreation professionals provide services to visitors who want additional knowledge, guidance, equipment, and/or support for a safe and rewarding recreational experience within the planning area.

2.14.46 Allowable uses and capacity for specific activities within certain geographic areas are consistent with a capacity and needs analysis. Permitted activities are compatible with the desired ROS setting, SRMA direction, and MA designations. One time/event permits (competitive, organized group) generally occur outside high use seasons to minimize impacts to casual use visitors and their recreational experience.

2.14.47 Recreation special use facilities are rare and temporary, and they are consistent with established ROS guidelines.

2.14.48 The recreation residence program is managed within existing authorized tracts on USFS lands.

2.14.49 On BLM lands, one time/event permits (competitive/organized groups) generally occur outside high use seasons to minimize impacts to casual use visitors and their recreational experience.

Bureau of Land Management Special Recreation Management Areas

2.14.50 Management of SRMAs is derived first and foremost by the recreation management objectives and prescribed Recreation Settings Characteristics Matrix, and all implementation actions are guided by those prescriptions.

2.14.51 **Cortez SRMA:** The Cortez/Mancos/Dolores area offers a unique combination of terrain, scenery, and climate that allows for nearly year-round recreation close to towns and surrounded by panoramic backdrops. The relatively small blocks of public land are conducive to non-motorized trail use with opportunities for short motorized trails and clearly defined open play/training areas. The Cortez SRMA is comprised of two Recreation Management Zones (RMZs): 1) the Montezuma Triangle (including Phil's World, Chutes and Ladders, Summit, and Aqueduct) and 2) Mud Springs. The Montezuma Triangle RMZ is managed to primarily target local hikers, runners, and mountain bikers wanting to participate in human-powered recreation activities within a short commuting distance of town. The Mud Springs RMZ is also managed for non-motorized trails, but includes greater emphasis on motorized recreation while protecting cultural resources. Other recreation activities are allowable in the Cortez SRMA to the extent they are compatible with the primary targeted activities (see Volume III, Appendix E, for a more extensive description of the Cortez SRMA).

2.14.52 **Dolores River SRMA:** The lower Dolores River winds through southwest Colorado mesa country, leaving a canyon reminiscent of the Grand Canyon, which provides a complete spectrum of recreational opportunities and settings. Between Bradfield Bridge and Bedrock are opportunities for primitive recreation and rugged OHV use, in settings ranging from WSAs to developed campgrounds. The Dolores River SRMA is managed to provide for a broad range of recreational benefits, primarily to river users, from the southwestern United States and local residents who participate in rafting. Within various RMZs, focus is also placed on the outcomes and benefits associated with fishing, challenging mountain biking, and OHV use. Other recreation activities are allowed when compatible with the primary targeted activities. The area has designated routes for recreational motorized use. Motorized watercraft is prohibited from Bradfield Bridge to Bedrock. The Dolores River Corridor Management Plan (BLM 1990) and Dolores River OHV designation (CO-030-8601, BLM 1986a) guide management of recreation in the area until an updated RAMP and Comprehensive Travel Management Plan are completed. The area is composed of four RMZs: 1) Bradfield Ranch to Dove Creek Pump Station, 2) Dove Creek Pump Station to Disappointment Creek, 3) Disappointment Creek to Gypsum Valley Bridge, and 4) Gypsum Valley Bridge to Bedrock (see Volume III, Appendix E, for a more extensive description of the area and the RMZs that comprise the Dolores SRMA).

2.14.53 **Durango SRMA:** Durango is a mountain community with an active population and tourist base drawn to the area due to proximity of quality recreational opportunities. The Durango SRMA is managed to provide benefits associated with quality non-motorized recreation activities within a short travel distance of the increasingly developed Durango interface area. While setting is important, it is easy access to rock climbing areas and a variety of well designed, single track trails that make this SRMA an important asset to the community and surrounding region. Specifically, this SRMA would benefit non-motorized trail users and climbers, Durango area recreational service providers (outfitters, retail stores, etc.), and open space advocates. The area comprises two RMZs: 1) Animas City Mountain, Skyline, and Grandview and 2) East Animas and Turtle Lake climbing areas (see Volume III, Appendix E, for a more extensive description of the area and the RMZs that comprise the Durango SRMA).

2.14.54 **Silverton SRMA:** The Silverton area is a unique alpine landscape dominated by 13,000-foot peaks and rich in mining history. The combination of rugged, seemingly impenetrable mountain peaks with the infrastructure left by industrious miners has resulted in a recreational destination for both winter and summer enthusiasts. The Silverton SRMA provides the perfect complement of summer and winter recreation opportunities across 44,488 acres of high-elevation public lands. Management allows for a spectrum of recreational opportunities from primitive hiking, camping,

and hunting in WSAs (West Needles Contiguous, Whitehead Gulch, Weminuche Contiguous, and Handies Peak) to mountain biking and extensive OHV exploration along the Alpine Loop National Backcountry Byway. During the winter months, there are similar opportunities ranging from extreme downhill skiing to snowmobiling, ice climbing, and cross-country skiing. Tying the seasons and activities together are exceptional opportunities for cultural tourism at sites such as the Animas Forks townsite and the Sound Democrat Mill. The SRMA is composed of two RMZs: 1) Summer and 2) Winter (see Volume III, Appendix E for a more extensive description of the area and the RMZs that comprise the Silverton SRMA).

Objectives

2.14.55 Meet or exceed maintenance standards annually for 75% of SJNF developed recreation sites with a "total rank score" of 50 or above within the most recent recreation facility analysis.

2.14.56 Evaluate all TRFO developed recreation sites via a FAMS condition assessment process once every 5 years (or current BLM standardized schedule for assessment). Any TRFO recreation sites scoring a Facilities Condition Index of greater than .70 (Poor Condition) will be brought up to standard before the next condition assessment or be prioritized for closure or deferred maintenance.

2.14.57 Decommission, close, or retrofit at least half of SJNF sites with a "total rank score" of <50 per the most recent recreation facility analysis to remove them from inventory or improve their ranking to >50 over the life of the LRMP.

2.14.58 For TRFO SRMAs, by the year 2015, achieve a mean (average) response of at least a "moderate" (i.e., 3.0 on a probability scale where 1 = not at all, 2 = somewhat, 3 = moderate, 4 = complete/total realization) attainment of the experiences and benefits identified for each SRMA in Volume III, Appendix E.

2.14.59 Within 5 years, limit all motorized recreation travel to designated routes and/or in designated areas, with the potential exception on TRFO lands of small "open" areas managed in accordance with BLM Handbook 8342.

2.14.60 On SJNF lands, implement plan actions from the San Juan-Rio Grande National Forests Wilderness Management Direction (USFS 1998a) to meet the wilderness standards established within that plan for all wilderness areas.

2.14.61 Over the life of the LRMP, complete and implement the RAMPs for all TRFO SRMAs.

Guidelines

2.14.62 The BLM must manage SRMAs to meet their management objectives through prescribed settings activities, experiences, and benefits (outcomes) identified in Volume III, Appendix E. For the TRFO, on lands not identified as SRMAs, recreation will be managed to meet ROS prescriptions as identified on the ROS maps and described in the Recreation Setting Characteristics Matrix (see Table 2.14.1).

2.14.63 During implementation of projects, every effort should be made to keep recreation sites in the project vicinity open in order to provide for visitor safety and experiences.

2.14.64 Summer and winter ROS maps should guide project-specific decisions and implementation activity. These maps define broad physical, social, and administrative settings for the entire SJNF and TRFO. Site-specific analysis is necessary ensure desired setting conditions are applied at the project level.

2.14.65 Dispersed sites should be closed, rehabilitated, or otherwise mitigated if there are social-use conflicts and/or resource impacts, or where dispersed sites conflict with the management of developed recreation sites (public or private).

2.14.66 The visual impacts of structures, ski lifts, roads, utilities, buildings, signs, and other built facilities should be minimized. Facilities, as seen from key viewpoints, should be architecturally designed to blend and harmonize with the surrounding land setting. Guidelines should be developed for each ski area that define the built environment (including architectural style, scale, colors, materials, and landscaping).

2.14.67 Revegetation in developed sites should use native plant material and be designed in a manner that maintains a natural appearance.

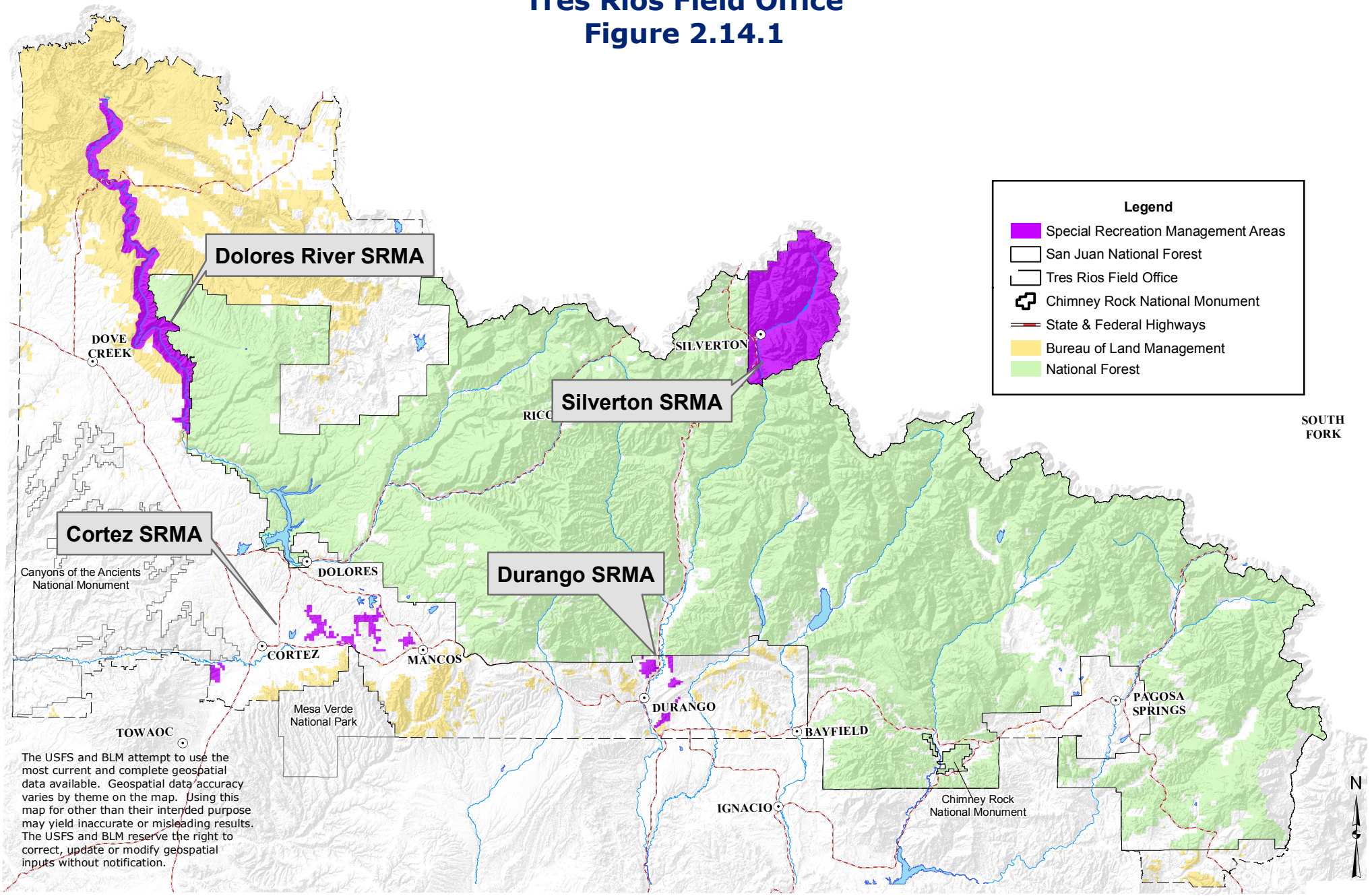
Additional Guidance

- The San Juan/Rio Grande National Forest Wilderness Management Direction decision, 1998
- 36 CFR 212, Travel Management
- 36 CFR 219, Planning
- 36 CFR 251, Land Uses
- 36 CFR 261, Prohibitions
- 36 CFR 290, Cave Resources Management
- 36 CFR 291, Occupancy and Use of Developed Sites and Areas of Concentrated Public Use
- 36 CFR 293, Wilderness/Primitive Areas
- 36 CFR 294, Special Areas
- 36 CFR 297, Wild and Scenic Rivers
- 43 CFR 8342
- 43 CFR 8340
- FSM 1950, Environmental Policy and Procedures
- FSM 2300, Recreation, Wilderness, and Related Resource Management
- FSM 2710, Special-Use Authorizations
- FSM 2720, Special Uses Administration
- FSM 7300, Buildings and Other Structures
- FSM 7400, Public Health and Pollution Control Facilities
- FSH 1909.15, Environmental Policy and Procedures Handbook
- FSH 2309.18, Trails Management Handbook
- FSH 2709.11, Special Uses Handbook
- FSH 7309.11, Buildings and Related Facilities Handbook
- FSH 7409.11, Sanitary Engineering and Public Health Handbook
- BLM Handbook H-1601_01
- BLM Manual 8300
- BLM Handbook 8550, Architectural Barriers Act of 1968
- USFS ROS Manual
- Dolores River Corridor Management Plan (BLM 1990)
- Applicable RAMPs

Special Recreation Management Areas

Tres Rios Field Office

Figure 2.14.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
April 25, 2013

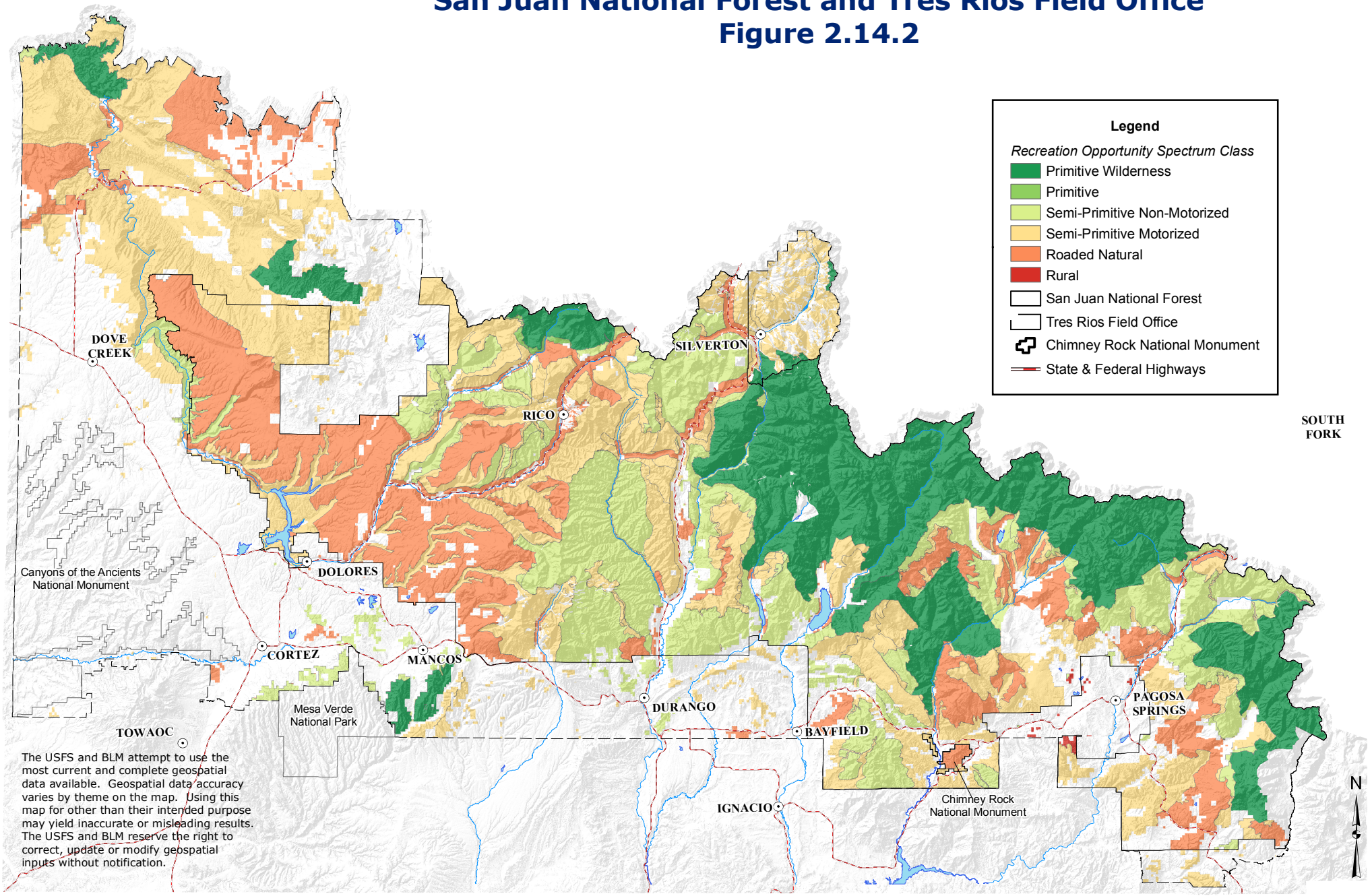
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Summer Recreation Opportunity Spectrum

San Juan National Forest and Tres Rios Field Office

Figure 2.14.2



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0 10 20 40 Miles

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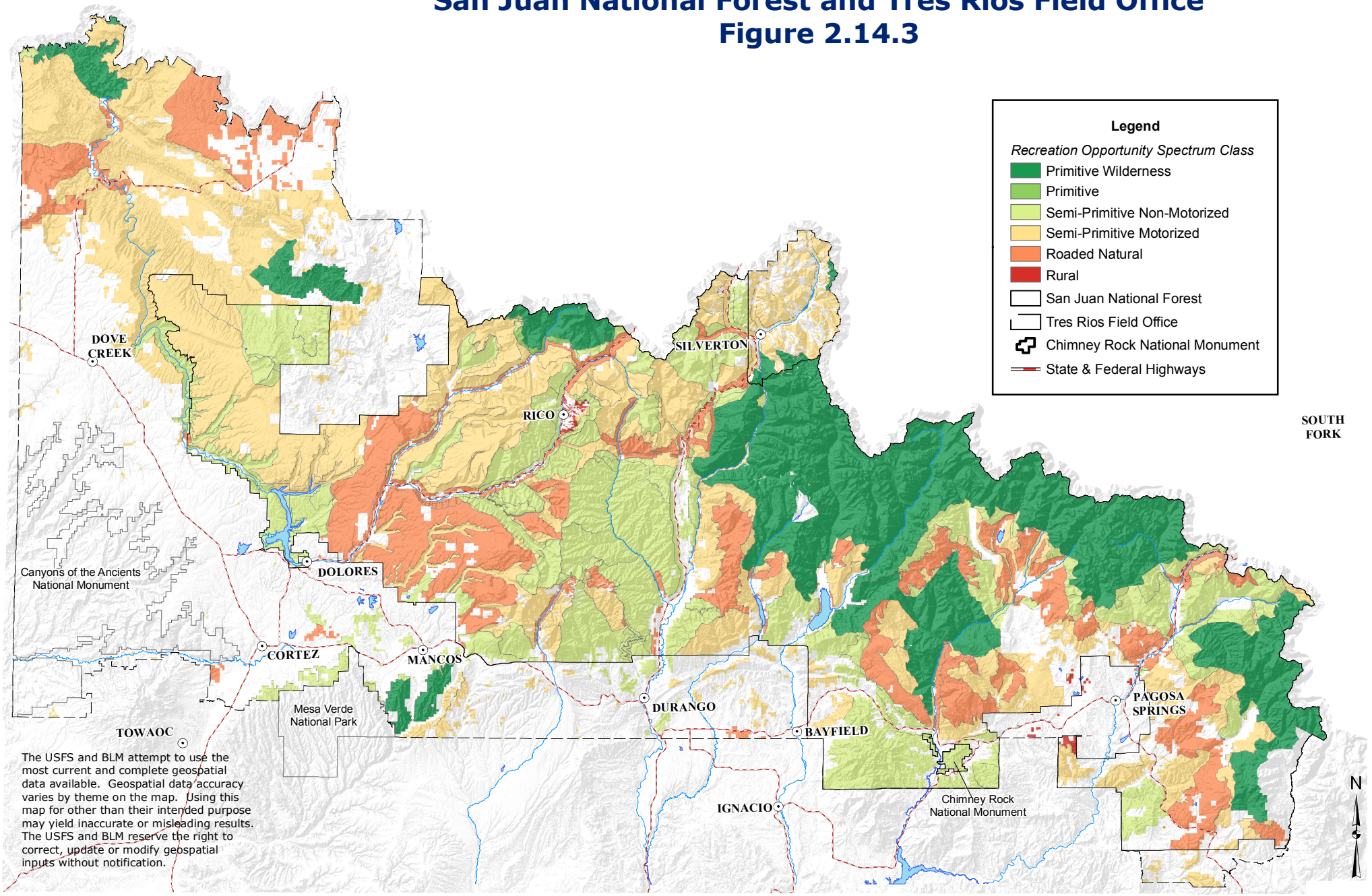
Land and Resource Management Plan

Winter Recreation Opportunity Spectrum

San Juan National Forest and Tres Rios Field Office

Figure 2.14.3



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San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

2.15 Scenery and Visual Resource Management

Introduction

The SJNF and TRFO possess outstanding and diverse scenery, capable of enhancing a wide variety of experiences. Many people choose to live in southwest Colorado, in large part, so that they can benefit from the high-quality scenery (with such views even serving as an important selling point for commercial and residential real estate). Scenery is a major draw for tourism and highway travel on the San Juan Skyway, which traverses through the planning area.

Planning for scenic resources on USFS lands involves inventorying for scenic values and then prescribing strategies to manage the resources that protect scenic resources, increasing opportunities for viewing those scenic resources, and careful development and design guidelines so that high scenic integrity may be conserved and sustained in order to meet public expectations. On USFS lands, the highest priority for protection (retention) of scenic quality will be given to the areas of heavy public use, including scenic byways and scenic travel corridors, nationally designated trails, developed recreation sites, administrative sites, and backdrops for cities and towns. The highest standards for visual resources (Scenic Integrity Objectives [SIO] rated as very high/high) are reserved for designated wilderness, roadless areas, or other specially designated areas.

The BLM uses a Visual Resource Management (VRM) system to manage the visual resources on public lands. This system addresses three key scenic values: public visual sensitivities, visibility, and scenic quality. It is geared to provide appropriate levels of protection for scenic values that:

1. Range from preservation (Class I) to retention (Class II), partial retention (Class III) and major modification (Class IV) of the characteristic landscape; and
2. Are based on visual resource inventories and other resource management considerations and are determined through the land use planning process at the manager's discretion.

This program also focuses on identifying and conserving the elements that make up the SJNF and TRFO "niche" and appropriately integrating them into resource management activities, as well as into facility and site development. This includes maintaining the integrity of the expansive, unencumbered landscapes and traditional cultural features distinctive to the planning area. As residential development and populations grow, large tracts of undeveloped lands are becoming scarce and more valued in southwest Colorado. Valued natural and cultural viewsheds are being lost incrementally as lands are developed and special features are removed or destroyed. The SJNF and TRFO will continue to participate with partners in feasible efforts to secure scenic easements and to acquire lands in order to protect outstanding cultural and natural viewsheds along scenic and backcountry byways and along national scenic and recreation trails.

On USFS lands, as opportunities arise, scenic integrity ratings will be conducted (or updated) for valued landscapes. In addition, a schedule of vegetation treatment locations and activities will be developed in order to address scenic quality related rehabilitation, enhancement, and maintenance. The Scenery Management System inventory for the USFS will be validated and updated as a part of ongoing site-specific project and programmatic analysis.

In order to continue to make scenery available for residents and visitors, efforts will also be made to ensure that scenic pullouts, vista points, waysides and access, and interpretive venues adequately support scenic viewing as a primary visitor activity.

On BLM-administered lands, visual resource inventories establish a baseline for evaluating and contrasting LRMP alternatives and impacts of VRM classes which are assigned during the land management planning process. During project planning, visual design considerations are required to be evaluated and incorporated for all surface-disturbing projects through the visual contrast rating process. The contrast rating process is used as a visual design tool in project design and as a project assessment tool during environmental review. Contrast ratings are required for proposed projects in highly sensitive areas or high impact projects, but may also be used for other projects where it would appear to be the most effective design or assessment tool. A brief narrative visual assessment is completed for all other projects that require an environmental assessment or EIS.

Desired Conditions

2.15.1 Public demand is met for high-quality scenery that benefits regional tourism, the local and regional economy, the local and regional community image, and overall recreation opportunities. Existing natural appearing scenic landscapes are maintained to the extent possible through project-specific mitigation measures.

2.15.2 Valued viewsheds, vistas, and cultural and natural landscape elements are protected, restored, and enhanced. Activities that protect, restore, enhance, and/or perpetuate long-term valued scenic elements may be visible to visitors in the short term. These activities may include, but are not limited to, fuel reduction, vista creation, wildland fire uses, and insect and disease prevention and suppression.

2.15.3 Views from developed sites, roads, trails, and viewpoints of concern are predominantly within natural-appearing landscapes. Views within developed recreation sites may appear heavily altered (due to recreation support facilities, recreation developments, hazard tree management, etc.).

2.15.4 Scenic and historic byways are recognized as needing to support scenic viewing and interpretation as a primary visitor activity.

2.15.5 Vegetation composition and structure valued for scenic character (including landscapes with a predominance of aspen and ponderosa pine) are showcased along scenic routes and at key viewpoints.

2.15.6 Conservation of significant cultural and natural viewsheds is established through strong partnerships between the USFS and BLM, state and local agencies, tribal governments, land trusts, and other interested individuals and organizations.

2.15.7 The built environment (including recreation facilities, utilities, and resource management structures, such as those constructed and/or maintained by permittees) reflects and complements the architectural character of the landscape, as appropriate, and reflects local vernacular architecture and natural landscape context. The quality of the built environment benefits from sound site planning and environmental design principles using efficient energy sources.

2.15.8 Vegetation valued for its scenic character is sustainable and consistent with the inherent landscape character.

2.15.9 Public lands scenery is maintained in a condition that meets the minimum established scenic objectives as established in Figure 2.15.

Objectives

2.15.10 On USFS lands, annually, ensure compatibility with scenic, visual resources and built environment LRMP standards and guidelines and agency direction within a project area by assessing at least one project with potentially high visual impacts.

2.15.11 On USFS lands, over the life of the LRMP, undertake at least five projects that improve or restore the scenic integrity of areas that currently do not meet SIO/VRM standards.

2.15.12 On BLM lands, the following objectives will be met for all VRM Class allocations:

2.15.12a Class I Objective. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

2.15.12b Class II Objective. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

2.15.12c Class III Objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

2.15.12d Class IV Objectives. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

Standards

2.15.13 On USFS lands, all resource management activities must be consistent with the established scenery objectives shown on Figure 2.15 unless a decision (with supporting rationale) is made to deviate from the management guidance in a site-specific NEPA decision.

2.15.14 On BLM lands, all resource management activities must be consistent with the prescribed VRM Class map (see Figure 2.15). A project that does not meet the objectives for the VRM Class in which the project is located must either be redesigned to meet those objectives, denied, or a plan amendment must be completed to alter the VRM Class.

Guidelines

2.15.15 On USFS lands, scenic integrity levels, as viewed from sensitive viewer locations (including National Scenic Byways, National Scenic and Recreation Trails, and developed recreation sites) should generally be managed as high SIO for foreground and moderate SIO for middle ground and background.

2.15.16 For all SJNF and TRFO lands, the built environment (structures), including non-recreational structures, should conform to the Built Environment Guide (USFS 2001c) and Guidelines for a Quality Built Environment (BLM 2010a) that apply to that location.

2.15.17 The quality of the built environment should benefit from sound site planning, as well as from LEED principles.

2.15.18 Straight line-of-sight road construction should be avoided. Roads through wooded areas should be designed in order to follow a curvilinear path using natural topography. Road construction across ridge tops should be avoided where it may cause a visual contrast in the landscape or where it may add skyline alterations that are visually obvious.

2.15.19 Interim reclamation should be maximized so that supplemental/natural revegetation is facilitated to stabilize soils and reduce visual impacts.

2.15.20 All permanent structures (on-site for more than 6 months) should be painted in a flat, non-reflective, earth-tone color.

2.15.21 The number and size of long-term traffic, regulatory, and site identification signs should be minimized. All such sign backs and posts should be painted a flat, non-reflective color.

2.15.22 Landscaping should blend site developments into the surrounding landscape. Native tree, shrub, and grass species should be employed in landscaping in order to lessen the contrast between a clearing and the adjacent natural environment.

2.15.23 Linear utility corridors and pipeline installations should employ vegetative edge feathering in sloped areas that may be visible from sensitive areas (including roads, use areas, and residences). Vegetation should be cleared, where necessary and appropriate, in a non-linear fashion in order to avoid a visually dominant straight line.

2.15.24 The minimum amount of permanent lighting needed should be installed. Light-sensitive, motion-activated lighting systems that are illuminated only when needed for security and/or for maintenance should be used. Light fixtures should be hooded in order to prevent horizontal and upward light pollution.

2.15.25 For timber harvest activities on SJNF lands, and fuels treatment activities on both SJNF and TRFO lands:

2.15.25a Treatment units should be designed to minimize visual contrasts. Design features could include leaving large clumps of residual trees or shrubs located within a treatment unit, eliminating straight lines along treatment boundaries and facilitating the re-establishment of native species, as well as other similar actions.

2.15.25b On SJNF lands, with regard to clearcutting, sanitation salvage, thinning, shelterwood harvests, and overstory removal, foreground views from system trails and roads, and from recreation areas, should be designed in a manner that avoids dominating views of large, continuous openings and is mitigated by the presence of sufficient groups of residual trees. Uncut islands should be reserved within unit(s) in order to reduce apparent size of unit, provide visual diversity, and achieve a more natural-appearing treatment area.

2.15.25c Within immediate foreground of recreation sites such as campgrounds, picnic areas, and trailheads:

- Slash, if chipped, should be substantially disposed of unless used as mulch, mud control, or path/pad surfacing;
- stumps should be low cut or flush-ground;
- slash should be substantially reduced; and
- treatment units should be designed to enhance scenic qualities within the viewshed.

2.15.25d Fire control lines should be restored to a natural appearance in areas within view of roads, trails, or recreation sites. Work should be accomplished within 3 years of completion of burn. When opportunity allows, and when it meets the recreation objectives prescribed for an area, fire control lines may be designed for long-term use as recreational trails and left in place.

2.15.25e Design of thinning units should avoid visual uniformity as viewed from roads, trails, and recreation sites.

2.15.25f Temporary slash or chip piles, log decks, or landings in VRM Classes I–III should:

- be located to facilitate future removal without the development of new ground disturbance (placed adjacent to pre-existing roads or primitive roads); and
- be disposed of within 3 years.

2.15.25g In sensitive foreground areas (as viewed from system roads, trails and/or developed recreation sites), unit boundaries and tree marking should be accomplished with temporary flagging and removed once need is fulfilled.

2.15.26 For developed ski areas:

2.15.26a Structures (including lift towers, cross-arms, lift terminals, sign backs, posts, utility boxes and transformers) should be painted, or in some way colored, in order to blend into the surrounding landscape, as approved by a BLM/USFS representative.

2.15.26b Glass windows of buildings at or above the tree line, or in highly visible areas, should be non-reflective.

2.15.26c Ski trail design should replicate patterns of natural landscape vegetation mosaic. Pattern, size, shape, and topographic location should be considered in mosaic.

2.15.26d Ski trail design should mimic natural landscape patterns, including size, shape, and topographic location. Size and shape of islands should avoid straight edges and geometric forms that contrast with natural openings and landforms.

2.15.26e Chair lift lines should be incorporated into trail clearings in order to reduce linear openings in forest stands.

2.15.26f Natural clearings should be incorporated into trail design.

2.15.26g Trail edges should be softened through feathering, scalloping, and/or other means.

2.15.26h Soil/plant/ground disturbances should be minimized to the smallest footprint feasible. Where disturbance is unavoidable, topsoil and organic matter should be salvaged and used for rehabilitation (so that color and textural contrast of the disturbed area is gone, and the disturbed area blends visually with the surrounding undisturbed area) within three growing seasons.

2.15.26i Topsoil should be stockpiled and used for rehabilitation of facility construction sites (so that color and textural contrast of the disturbed area is gone, and the disturbed area blends visually with the surrounding undisturbed area) within 3 growing seasons.

2.15.26j Disturbance of valued landscape elements important to foreground views (including tree groves and boulders) should be limited. Construction fencing should be used to mark limits of disturbance at all construction sites.

2.15.26k The size and disturbance associated with material staging and equipment access and parking should be limited. These areas should be located, where feasible, outside sensitive viewsheds.

2.15.26l Vegetation treatments within the immediate foreground of popular summer travel routes should achieve a moderate SIO.

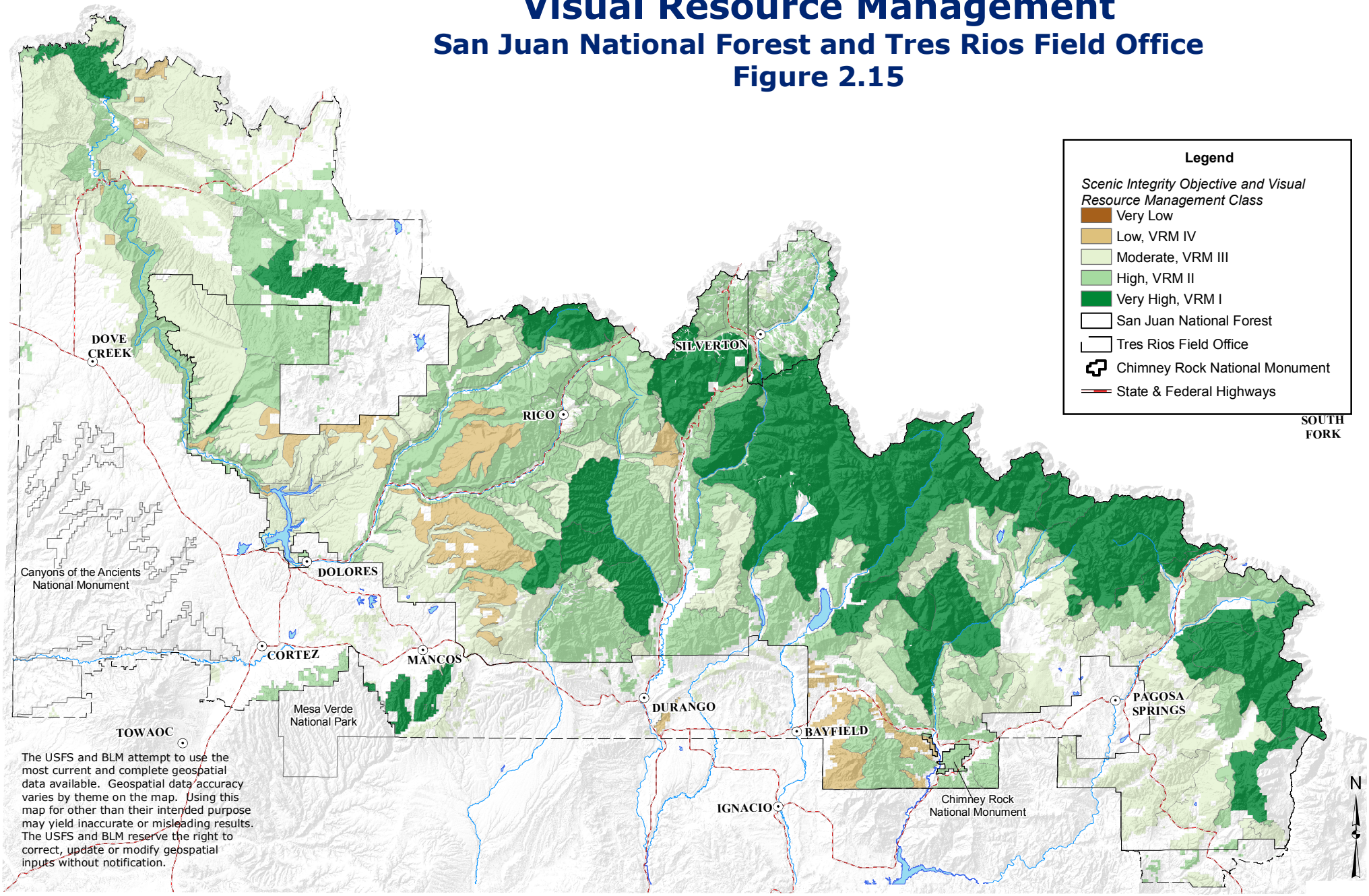
Additional Guidance

- Visual Resource Management Manual 8400
- Visual Resource Inventory BLM Manual Handbook 410-1
- Visual Resource Contrast Rating; BLM Manual 8431
- Visual Resource Contrast Rating
- BLM Manual Handbook 8431-1
- BLM Guidelines for a Quality Built Environment (BLM 2010a)
- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (USDI and USDA 2007)

Scenic Integrity Objective and Visual Resource Management

San Juan National Forest and Tres Rios Field Office

Figure 2.15



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May 31, 2013

2.16 Heritage and Cultural Resources

Introduction

The SJNF and TRFO have a long and rich prehistoric and historic record, with human settlement of the area spanning approximately 12,000 years. The archeological record within the planning area contains some of the earliest agricultural societies in the region. The historic period brought Spanish and Euro-American explorers, trappers, miners, and settlers into the area. This long record of human occupation has left one of the highest densities of prehistoric and historic heritage and cultural resources found in the United States. These sites have national, international, and Native American tribal significance.

Heritage and cultural resources are non-renewable resources that include historic and prehistoric artifacts, structures, sites, districts, and archival materials important for their scientific, educational, economic, traditional, and social values. Visitation to heritage and cultural resource sites within the planning area is an important contributor in the region's economy, and draws great interest from people from all over the world.

The USFS and BLM are responsible for identifying, evaluating, and protecting heritage and cultural resources on the public lands they manage. Significant heritage and cultural resources within the planning area include resources that are eligible for listing, or are already listed, on the National Register of Historic Places (NRHP) and Priority Heritage Assets.

Significant heritage and cultural resources within the SJNF and TRFO include the Chimney Rock National Monument, the Falls Creek Archaeological Area, the Anasazi National Register District, the Mesa Verde Escarpment area, the Anasazi Culture Area ACEC, the Spring Creek National Register District, the Lost Canyon National Register District, and the historic mining sites along the Alpine Loop Back Country Byway.

The Old Spanish National Historic Trail crosses through the planning area. Authorized by Congress in December 2002, the Old Spanish National Historic Trail commemorates the first overland link from Santa Fe to California. While the Old Spanish Trail is currently mapped as crossing the planning area, very few localities associated with the trail have actually been identified and ground-truthed.

The heritage and cultural resources found within the planning area face numerous impacts from natural and human disturbances. Population and visitation growth and development impact non-renewable heritage and cultural resources both directly and indirectly. Direct impacts include disturbance from construction, vandalism, and excessive or inappropriate visitor use. Indirect impacts include accelerated erosion and visual impacts to cultural landscapes.

Under the direction of the LRMP, the SJNF and TRFO heritage and cultural resources programs will be focused on three main areas of cultural resource management:

- Protecting archeological, historical, cultural, and traditional resources: this includes both proactive and reactive efforts, as well as offering support to other resource programs. Efforts and support activities include Section 106 of the National Historic Preservation Act (NHPA) support for federal undertakings and NHPA Section 110 efforts that implement proactive cultural resource management. Implementation of both Sections 106 and 110 of the NHPA can involve inventories, identification, documentation, evaluation, monitoring, consultation, nomination, preservation, site protection, mitigation, stabilization, and/or restoration of heritage and cultural resources.
- Providing research, education, and interpretive opportunities: Support research is provided by qualified permitted individuals, organizations, colleges and universities. On- and off-site educational and interpretive opportunities can be provided through a wide variety of materials and media (including signage, brochures, publications, presentations, DVDs, and websites).

- Working collaboratively with partners: This includes site stewards, volunteers, state and other federal agencies, local and tribal governments, schools and universities, and non-profit groups. It includes funding organizations in order to provide site protection, research, educational, and interpretive opportunities.

Desired Conditions

2.16.1 Significant heritage and cultural resources, such as USFS Priority Heritage Assets and sites on the NRHP, are maintained in good to excellent physical condition. Significant cultural values are protected or preserved. Heritage and cultural sites are preserved and stabilized, and may be available for interpretation and research; they may have site-specific management plans. Sites are protected from physical damage and excessive wear and tear resulting from visitor use.

2.16.2 USFS Priority Heritage Assets have current (5 years old or less) condition assessments.

2.16.3 Significant heritage and cultural resources are listed on the NRHP.

2.16.4 The visual and aesthetic setting and physical associations of significant sites are protected so that the visitor experience of the historical/cultural landscape and setting is maintained.

2.16.5 USFS/BLM activities are compatible with management objectives for significant sites or are temporary in their impact to the site and its viewshed, as well as to the overall visitor experience.

2.16.6 A management presence at key heritage and cultural resource sites is provided to protect sensitive or heavily visited sites from inappropriate use or vandalism.

2.16.7 Interpretive displays, visitor contacts, and/or brochures are available in order to help visitors and employees understand, and appreciate, the heritage and cultural resources associated with the planning area. A wide range of heritage activities, experiences, and products (both on- and off-site) are available for visitor enjoyment and education. Off-site activities include museum displays, brochures, audio programs, classroom presentations, and field trips. Public access and interpretive efforts are compatible with the physical, cultural, and recreational settings and values of the resources.

2.16.8 Select historic cabins are restored and adaptively reused for appropriate recreation and/or for interpretive use.

2.16.9 Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.

2.16.10 Looting of sites is reduced through increased public awareness and education related to cultural resources. Vandalism at sites is promptly remedied to prevent recurrence.

2.16.11 Heritage and cultural resource databases are managed for efficient and accurate management and research, in cooperation with the Colorado Office of Archaeology and Historic Preservation.

2.16.12 Restrictions through the use of permits and/or visitation controls are implemented when necessary to protect sites from physical damage and excessive wear and tear from visitation.

Objectives

2.16.13 Over the implementation life of the LRMP, protect/preserve/stabilize at least 15 significant heritage/cultural resources (seven on the SJNF and seven on the TRFO) that have identified deferred maintenance needs that if not addressed will result in loss of the resource.

2.16.14 Annually post protective signage and/or surveillance cameras on at least two heritage and cultural resources sites that are at-risk for vandalism (one on the SJNF and one on the TRFO).

2.16.15 Over the implementation life of the LRMP, list six sites and/or districts on the NRHP (three on the SJNF and three on the TRFO).

2.16.16 Over the implementation life of the LRMP, implement the Anasazi National Register District Monitoring Plan and new site monitoring plans for the Lost Canyon and Spring Creek National Register Districts.

2.16.17 Over the life of the LRMP, partner with the Old Spanish Trail Association to ground truth the location of at least two segments of the Old Spanish National Historic Trail.

2.16.18 Over the life of the LRMP, develop at least one interpretive product in partnership with the Old Spanish Trail Association that interprets the Old Spanish National Historic Trail within the planning area.

2.16.19 Over the life of the LRMP, inventory high potential historic sites and trail routes of the Old Spanish Trail, develop a national trail management corridor, and establish goals and objectives for national trails in accordance with BLM Manuals 6250 (BLM 2012c) and 6280 (BLM 2012d).

Standards

2.16.20 The portions of the Animas City to Silverton Wagon Road (5LP1258) that are within the SJNF must be retained under federal ownership and management. All portions of this historic wagon road on federal lands are not available for future disposals or exchanges. This eligible site will be preserved and managed as a Priority Heritage Asset.

2.16.21 No camping must be allowed within 300 feet of the Animas Forks and Gold Prince Mill National Register Districts.

Guidelines

2.16.22 Activities that could adversely affect sites eligible or potentially eligible for the NRHP should avoid these sites by a minimum of 300 feet, unless otherwise specified by the Authorized Officer, and/or unless other mitigating measures are developed. If a project is specified by the Authorized Officer to be within 100 feet of an eligible or unevaluated site, all ground-disturbing activity should be monitored by a qualified archaeologist.

2.16.23 **Old Spanish National Historic Trail:** A literature search and/or Class III cultural resources survey should be conducted within 0.5 mile of either side of the centerline of the Congressionally designated Old Spanish National Historic Trail in high potential segments, prior to authorization of ground-disturbing activities, or activities that could substantially interfere with the nature and purposes of the trail.

Additional Guidance

Policy and Handbooks

- BLM policy and program guidance for the management of cultural resources is outlined in Manual Sections 8100, 8110, 8120, H-8120-1, 8130, 8140, 8150, and 8170
- BLM Colorado Handbook of Guidelines and Procedures for Identification, Evaluation, and Mitigation of Cultural Resources (BLM 1998)
- FSM 2360, Special Interest Areas
- Departmental Manual Part 411, Museum Property Management (USDI 1997)
- BLM IMs
- BLM Manuals 6250 and 6280 (BLM 2012c, 2012d)

Executive Orders

- EO 11593, Protection and Enhancement of the Cultural Environment
- EO 13007, Providing for American Indian and Alaska Native Religious Freedom and Sacred Land Protections
- EO 13084, Consultation and Coordination with Indian Tribal Governments
- EO 13195, Trails for America in the 21st Century
- EO 13287, Preserve America

Management Plans

- USFS Draft Old Spanish Trail Corridor Management Plan, 1981

Agreements

- National Programmatic Agreement between the BLM, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers, regarding the manner in which BLM would meet its responsibilities under the NHPA (1997)
- State Protocol Agreement between the Colorado State Director of the BLM and the Colorado State Historic Preservation Officer, regarding the manner in which BLM would meet its responsibilities under the NHPA (1998)
- Programmatic Agreement between the BLM, the State of Colorado, the National Forests in the State of Colorado, the Forest Service, the Colorado State Historic Preservation Office, and the Advisory Council on Historic Preservation Regarding the Management of Wildland Fire for Resource Benefits (Agreement No. 1102-002-98-038) (1998)

2.17 Paleontological Resources

Introduction

Paleontological resources (fossils) constitute a scientific record of the history of life on earth. Management requirements related to ground-disturbing activities are applied in order to protect paleontological resources and the scientific values they contain. Avoidance and collection are the preferred mitigations for the preservation of paleontological resources.

On March 30, 2009, the Paleontological Resources Preservation Act (PRPA) became law when President Obama signed the Omnibus Public Land Management Act of 2009, Public Law 111-011, Title VI, Subtitle D on Paleontological Resources Preservation (known by its popular name, the PRPA) (123 Stat. 1172; 16 USC 470aaa). The PRPA requires the Secretaries of the Interior and Agriculture to manage and protect paleontological resources on federal land using scientific principles and expertise. The PRPA includes specific provisions addressing management of these resources by the USFS, BLM, the National Park Service, the Bureau of Reclamation, and the USFWS.

In 1996 the USFS Paleontology Center of Excellence and the Region 2 Paleo Initiative developed a classification system called the Probable Fossil Yield Classification (PFYC) in order to promote consistency throughout and between agencies (USFS 1996c). The PFYC system provides baseline guidance for assessing the relative occurrence of important paleontological resources and the need for mitigation. Geologic units are classified at the formation, or member, level according to the probability of yielding paleontological resources of concern to land managers. Classifications range from Class 1 to 5 and are based on the relative potential to yield vertebrate, uncommon invertebrate, or plant fossils of scientific interest. A higher classification number indicates a higher fossil yield potential and greater sensitivity to adverse impacts (see Volume III, Appendix B, for a description of the five PFYC classes and the suggested management direction indicated for each class; geological formations that are known to contain significant vertebrate, invertebrate, and plant fossils include those listed in Appendix B). The BLM manages paleontological resources, including mitigation and sensitivity rankings, per BLM Handbook H-

8270-1, General Procedural Guidance for Paleontological Resources Management (BLM 2012e), BLM WO IM 2008-09 on the PFYC, BLM WO IM 2009-11 on Assessment and Mitigation, and the PRPA. In accordance with the PRPA and NEPA, paleontological resources are to be considered during the planning process using scientific principles and expertise. Known and newly discovered paleontological localities are to be monitored and managed using scientific principles and expertise in accordance with the PRPA.

Within the planning area, the BLM identified the Morrison Formation as having the potential for vertebrate fossil occurrences. Most of the planning area has not been surveyed for paleontological resources, and the extent of occurrences of most paleontological resources is not known.

Desired Conditions

2.17.1 Acquiring better knowledge of paleontological resources on SJNF and TRFO lands is emphasized.

2.17.2 Paleontological resources are available for appropriate scientific, educational, and, where appropriate, recreational uses by present and future generations.

2.17.3 Known dinosaur localities are actively managed for the relevance and importance of Jurassic fossils.

2.17.4 The McPhee Reservoir sauropod locality is actively managed through a long-term stewardship agreement to preserve dinosaur partial skeletons actively eroding along the margin of the reservoir.

Objectives

2.17.5 Over the life of the LRMP, identify and document up to five paleontological sites on SJNF and TRFO lands.

2.17.6 At a minimum, monitor two paleontological localities per year.

2.17.7 Where feasible, conduct fossil resource inventories in areas where they are needed on a project basis over the life of the LRMP.

2.17.8 Increase opportunities for outdoor recreational experiences and volunteer projects focused on fossil resource management, and increase the number of partnerships with educational and research institutions.

Standards

There are no standards for paleontological resources.

Guidelines

2.17.9 Known paleontological localities should be managed to:

a. Allow collection of paleontological resources with authorization for educational and scientific purposes;
b. Monitor casual collection of common invertebrate and plant paleontological resources localities, and institute local area closure if necessary;
c. Evaluate known localities for potential interpretive use by the public; and
d. Input known locality information into a protected database for further paleontological resources management needs.

Additional Guidance

- PFYC, as developed by the Paleontology Center of Excellence and the Region 2 Paleo-Initiative (USFS 1996c)

- Fossil Yield Potential Classification for San Juan National Forest (Schumacher 2011)
- Public Law 111-011, Subtitle D - PRPA, 2009
- BLM Handbook H-8270-1, General Procedural Guidance for Paleontological Resources Management (BLM 2012e)
- BLM WO IM 2008-09 on the PFYC, 2007

2.18 Lands and Special Uses

Introduction

Occupancy of public lands by private individuals or interests, or by local, state, tribal, and other federal agencies, for a variety of activities (including roads, utility lines, communication sites, dams, and other private or commercial uses that cannot be accommodated on private land) is authorized by special use permits, ROW grants, easements, and leases. The lands and special uses programs include activities such as land ownership adjustments, land use and access, and land withdrawals. Program emphasis includes:

- facilitating the efficient and effective acquisition, disposal, and management of the public lands;
- ensuring that the wide and growing variety of demands by the public, commercial interests, state and other federal agencies, and tribal and local governments are compatible with environmental protection;
- managing the legitimate needs for access to public and private lands; and
- meeting legal requirements for specific resource protection.

Land Ownership

Public lands are generally retained in federal ownership in order to provide long-term values. The vision for the planning area is to retain in public ownership all lands that meet the long-term needs of maintaining the integrity of contiguous natural ecosystems, river frontage, riparian areas and wetland ecosystems, recreation and open space, scenery, and clean air and water. Under the direction of the LRMP, on a case-by-case basis and through the methods available to each agency, the SJNF and TRFO would acquire lands and/or mineral estates that enhance this vision. The agencies would dispose of lands that do not meet these needs or are interspersed with expanding communities where the agency mission can no longer be met. In all such cases, the primary guiding principle would be the greater public benefit.

Land Use and Access Authorizations

The USFS and BLM issue authorizations for occupancy and use for a variety of private and commercial entities; as well as for local, state, tribal, and other federal agencies. This is accomplished through easements, ROWs, special use permits, leases, and other instruments. Trespasses and encroachment issues are resolved through removal, remediation, or authorization. The BLM and USFS maintain and enhance public access to the lands identified for retention, as well as to other public lands where improved access meets resource and/or management needs. The BLM and USFS engage in cooperative management of private and commercial access needs (with private individuals, federal, state, and local agencies, and tribal governments) and encourage the formation of “road-user associations” where multiple users require access. All authorized uses on public lands are required, by law, to meet all applicable environmental protection measures. For all proposed activities that have the potential for disturbance to lands and resources, a project design, prepared by the applicant, is required and is subject to full public environmental analysis, review, and, when necessary, appropriate monitoring.

Land Withdrawals

Formal withdrawal of land from specific land uses is a tool designed to ensure the reservation of the land or resource for a dominant use. Withdrawals require a full public environmental analysis and decision process. The vision for the planning area is to pursue formal withdrawal of lands where this process has identified lands with high values and resources needing protection that cannot be provided by routine management, or where withdrawal is required by law.

Acquisition and Disposal of Lands

The planning area contains numerous parcels of enclosed private land (in-holdings) that are undeveloped. Land acquisition policies of both the BLM and USFS recognize the value of acquiring such parcels, especially where the affected private lands contain unique or special values or benefits. Acquisition of these parcels would protect such values for the future and contribute to the mission of the BLM and USFS. See Guidelines below for a list of criteria that would be used to identify and prioritize parcels for possible acquisition.

USFS-administered lands within the planning area are generally suitable for long-term retention under federal ownership. The USFS does not carry out comprehensive inventories of lands designed to identify potential for disposal or retention. However, USFS-administered lands are generally available for consideration for transfer of ownership where there is determined to be a public or resource benefit. Such actions may occur through land exchange, disposal of small tracts by direct sale under specific authorities, jurisdictional transfer between agencies, and/or through disposal for community purposes. Specific proposals may be considered on a case-by-case basis.

The vast majority of BLM-administered lands within the planning area will be retained in federal ownership for a wide variety of resource uses that are best served by long-term federal ownership and management. Retention would support effective administration and resource protection. This LRMP identifies other BLM-administered lands that would be available for disposal through sales, exchanges, or other authorized transfer of ownership (Figure 2.18.1, see Volume III Appendix A). These lands are not suitable for long-term retention under federal ownership due to a lack of substantial public or resource values, the high cost or the inability of the BLM to manage the land, or the potential for greater public value under non-federal ownership. Disposal can provide trading stock and/or contribute funds toward acquisition of land with greater public values and benefits. Under the Recreation and Public Purposes Act or other legislative actions, some lands may be suitable for transfer of ownership to local communities in order to meet community expansion needs (including expansion of facilities, infrastructure, open space and parks, etc.). See Guidelines below for a list of criteria that would be used to identify and prioritize additional lands for disposal.

Designated Energy Corridors and Linear Energy Transmission Authorizations

Designated energy corridors are intended to support different types of compatible energy-transport systems. Energy corridors on federal lands provide pathways for future pipelines and long-distance electrical transmission lines that are expected to help relieve congestion, improve reliability, and enhance the national electric grid. Future use of the corridors should reduce the proliferation of ROWs across the landscape and minimize the environmental footprint from development. These corridors are defined by a centerline and a stated width that can be used for energy transmission projects. Within these areas, energy transmission projects would be an appropriate (suitable) use of land allocated to energy corridors. Project applicants would not be constrained to use an approved energy corridor, but would be encouraged to do so in order to streamline the regulatory process and/or reduce the time frames that would be required in order to develop alternative alignment site proposals. Designation of corridors does not authorize any projects, mandate that future projects be confined to the corridors, or preclude agencies from denying a project in a designated corridor. Energy projects to be located within designated corridors will require a formal, agency-approved project ROW that will contain site-specific requirements. A ROW would occupy a smaller portion of any designated energy corridor, and the granting of a ROW would require site-specific environmental and engineering information and analysis. Energy corridors, as designated, should be suitable for interstate and intrastate ROW distribution and energy-producing facilities, as required, in order to meet current and 10- to 15-year demand forecasts. Designated energy corridors differ from separate energy transmission ROWs/special use authorizations in that these types of authorizations are project-specific assignments of a relatively narrow strip of land permitted and limited to a single energy transmission project.

Section 368 of the Energy Policy Act of 2005 directs the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate energy transmission corridors on federal land in 11 western states (Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming) for oil, gas, and hydrogen pipelines, and for electricity transmission and distribution facilities. Based on consideration of the effects of corridor designation described in the Final Programmatic Environmental Impact Statement (PEIS), Designation of Energy Corridors on Federal Land in the 11 Western States (DOE/EIS-0386) (U.S. Department of Energy [DOE] and BLM 2008), the USDA issued the Record of Decision, Designation of Section 368 Energy Corridors on National Forest System Land in 10 Western States (USFS 2009b) designating one new Section 368 corridor (No. 130-274) across lands administered by the SJNF. This corridor was designated with a default width of 3,500 feet and for compatible multimodal uses with the centerline of the existing Trans-Colorado Natural Gas Pipeline. Based on the same EIS, the BLM issued the Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States (BLM 2009) designating one new Section 368 corridor (No. 130-131) that is partially located on lands administered by the TRFO (this corridor will be jointly managed by the BLM Uncompahgre Field Office). This corridor was designated with a default width of 3,500 feet and for electric transmission only with the centerline following the Montrose/San Miguel County Line from the Tri-State Generation and Transmission Association, Inc., Gas and Electric Nucla-Cahone 245 115-kV Electric Transmission Line to the Trans-Colorado Natural Gas Pipeline Corridor. Interagency operating procedures (IOPs) developed and evaluated in the Energy Corridors EIS and adopted in the BLM and USFS RODs amending land use plans are expected to foster long-term, systematic planning for energy transport development in the West, provide industry with a coordinated and consistent interagency permitting process, and provide practicable measures to avoid or minimize environmental harm from future development within the corridors. IOPs are incorporated here by reference and are mandatory, as appropriate, for projects proposed within the Section 368 corridors. These IOPs are also suggested guidance for all energy pipelines and electric transmission lines within designated energy corridors that were not designated through the Section 368 process.

Table 2.18.1 shows a listing of designated corridors and existing linear energy transmission authorizations in which future facilities would be encouraged to locate. Figure 2.18.2 illustrates the approximate location of corridors and existing transmission facilities across the planning area. Transmission facilities include 69-kV and greater transmission lines and ancillary facilities (USDA et al. 2005). Oil and gas interstate pipelines identified as locally designated corridors are those that do not require Congressional notification (as required by the Mineral Leasing Act of 1920, as amended, in accordance with 30 USC 185(w)) and are between 16 and 24 inches in diameter. The Trans-Colorado Natural Gas Pipeline route is an existing designated corridor in the current San Juan National Forest Land Management Plan and is designated a Section 368 Energy Corridor under the Energy Policy Act of 2005.

Table 2.18.1: Designated Energy Corridors and Energy Transmission Facilities on the San Juan National Forest and Tres Rios Field Office

Corridors and Transmission Lines	Agency	Size	Potential Uses
Western Area Power Administration – Currecanti to Lost Canyon	USFS	230 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Western Area Power Administration – Lost Canyon to Shiprock	BLM	230 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Western Area Power Administration – Montrose to Hesperus	BLM/ USFS	345 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Tri-State Generation and Transmission Association, Inc. – Burro Bridge to Cascade	BLM/ USFS	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Tri-State Generation and Transmission Association, Inc. – Burro Bridge to Telluride	USFS	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Tri-State Generation and Transmission Association, Inc. – Cahone to Empire	BLM	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis

Corridors and Transmission Lines	Agency	Size	Potential Uses
Tri-State Generation and Transmission Association, Inc. – Nucla to Cahone	BLM/ USFS	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Tri-State Generation and Transmission Association, Inc. – Durango to Bayfield	BLM	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Tri-State Generation and Transmission Association, Inc. – Bayfield to Pagosa Springs	USFS	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
La Plata Electric Transmission	USFS	115 kV	Upgrade existing facilities; additional facilities considered on a case-by-case basis
Northwest Pipeline Corridor – (includes MapCO and Kinder Morgan)	BLM/ USFS	Multiple pipelines	Upgrade existing facilities
Corridors Designated under Section 368 of the Energy Policy Act of 2005			
Designated Utility Corridor. Trans-Colorado Pipeline Corridor (368 corridor segment 130-274)	USFS	22-inch gas	Multimodal facilities considered
Designated Utility Corridor. Tri-State Generation and Transmission Association, Inc. – Nucla – Trans Colorado Pipeline Corridor (368 corridor segment 130-131 [N])	USFS	115-kV electric transmission line	Electric transmission only; corridor jointly managed with BLM Uncompahgre Field Office

Communication Sites

Within the planning area, proposals for communication and electronic sites are encouraged to use existing sites, within capacity and compatibility limits. Generally, existing communication sites have a low SIO. Communication site development is generally suitable at designated communication sites when it is compatible with existing uses. Table 2.18.2 lists the location of current communication sites and suitable uses for each site. Figure 2.18.2 locates the sites geographically.

Table 2.18.2: Communication Sites, Locations, and Suitable Uses

Communication Site	Agency	Geographic Location			Suitable Uses
		Latitude*	Longitude	Elevation (feet)	
Bayfield Ranger Station	USFS	37.2269	-107.6009	6,900	Government use; broadcast
Benchmark	USFS	37.7677	-108.5714	9,264	Government use only
Caviness Mountain	USFS	37.363	-108.1508	10,050	High-power; broadcast and non-broadcast
Coal Bank	USFS	37.6973	-107.7785	10,660	Low-power; non-broadcast
Devil Mountain	USFS	37.2844	-107.2759	9,922	Government use only
Dolores-Montezuma County	USFS	37.4823	-108.5113	7,420	High-power; broadcast and non-broadcast, state and local government use only
Eagle Pass	USFS	37.4131	-108.013	11,880	Low-power; non-broadcast
Eightmile Mesa	USFS	37.1715	-106.997	8,176	Low-power; non-broadcast
Escalante	USFS	37.4667	-108.5244	7,080	Low-power; broadcast
Expectation Mountain	USFS	37.6924	-108.0658	11,680	Passive-reflector
Grassy	USFS	37.3589	-107.5534	9,525	Government use; low-power; broadcast
Kendall	BLM	37.7956	-107.6434	13,400	Low-power; non-broadcast
Kennebec	USFS	37.451	-108.0328	12,240	Government use only

Communication Site	Agency	Geographic Location			Suitable Uses
		Latitude*	Longitude	Elevation (feet)	
Menefee	BLM	37.3262	-108.2489	8,823	Low-power; broadcast and non-broadcast
Missionary	USFS	37.3636	-107.783	9,860	Low-power; broadcast and non-broadcast
Oak Brush Hill	USFS	37.1925	-107.0996	8,623	Government use; low-power; broadcast and non-broadcast
Pargin	USFS	37.1975	-107.4625	8,910	Government use only
Parrott Peak	USFS	37.3721	-108.1026	11,540	Low-power; non-broadcast
Smelter	BLM	37.2619	-107.9065	7,725	Government use; low-power; broadcast
Spring Creek	USFS	37.1931	-107.4726	8,870	Low-power; non-broadcast
Storm Peak	BLM	37.8675	-107.6548	13,053	Passive-reflector
Tuckerville	USFS	37.4992	-107.4648	11,640	Government use only
Yellow Jacket	USFS	37.2555	-107.4656	8,397	Low-power; non-broadcast

* These latitude/longitude coordinates do not delineate the boundaries of the ROW use areas; rather, they give approximate locations. Boundaries of the use areas would be defined in individual site plans.

Desired Conditions

2.18.1 Public land ownership boundaries are clearly marked on the ground, and land ownership information is easily accessible to the public.

2.18.2 Surface and mineral ownership within the planning area is consolidated in order to meet resource and community needs and to facilitate efficient land management.

2.18.3 The SJNF and TRFO retains and/or acquires river frontage, riparian areas and wetland ecosystems, and other lands that would enhance or protect recreation, open space, scenery, clean air and water, and key habitat for species.

2.18.4 The SJNF and TRFO acquire adequate access to isolated lands for resource or management needs.

2.18.5 Road access to private land is granted only where no other reasonable alternative exists and where it meets the appropriate road design and maintenance standards necessary for resource protection and public safety.

2.18.6 Road use authorizations for roads that serve predominantly non-SJNF purposes are provided to local road jurisdictions (reserving public access, where appropriate).

2.18.7 Energy corridors throughout the planning area improve the delivery of electricity, oil, and gas and enhance the western electric transmission grid by improving reliability, reducing congestion, and contributing to the national electrical grid.

2.18.8 Future linear transmission uses are encouraged to occur adjacent to existing authorized routes for transmission lines over 69 kV and for pipelines more than 10 inches in diameter. Local distribution lines and smaller pipelines are located in conjunction with the existing road system or other previously disturbed areas where possible.

Objectives

2.18.9 Annually, survey and post 3 miles of property line adjacent to private land and boundaries where trespass or encroachment is most likely.

2.18.10 Annually, over the life of the LRMP, acquire an average of two new road and trail ROWs for high-priority access or to fill gaps in existing access to public lands.

2.18.11 Within 5 years, convey to appropriate county jurisdiction one high-priority road on NFS lands identified as dominantly non-USFS access or use.

2.18.12 Annually, ensure that all relevant desired conditions are being met or trending toward being met in special use permit areas by inspecting at least 5% of existing special use permit areas.

Standards

2.18.13 No new Desert Land Entry or Carey Act applications will be accepted.

Guidelines

2.18.14 Land boundary lines should be surveyed, posted, marked and maintained according to these priorities: 1) lines needed to meet planned activities, 2) lines needed to protect SJNF and TRFO lands and special areas from encroachment, 3) lines where trespass or encroachment are most likely or are suspected, and 4) all other land boundary lines.

2.18.15 BLM land ownership adjustments should meet the recommendations and priorities of the specific BLM land classification category (see Figure 2.18.1).

2.18.16 The SJNF and TRFO should acquire or retain lands, interest in lands, or ROWs or easements:

- within designated wilderness areas, other Congressionally classified areas, such as the Piedra Area and wild and scenic rivers (WSR), and WSAs;
- that provide habitat for animal and plant species designated as threatened or endangered, and/or for other species identified for special protection;
- that contain wetlands and/or floodplains and associated riparian ecosystems, or enhance watershed protection;
- with historical or important heritage resources;
- where resource management or values are threatened by change of use or may be enhanced by public ownership;
- that enhance resource management and values, improve production of goods and services, or are needed to meet resource management goals and objectives;
- that contain resources or values of local importance such as water frontage, outstanding scenery, and outdoor recreation, or that maintain or stabilize local economies;
- that consolidate federal lands or reduce the miles of interior boundaries and number of interior corners;
- where the entire mineral estate is acquired with the surface estate or where acquisition will not include lands likely to go to patent under the 1872 Mining Law; and
- where needed to enhance public and administrative access to federal lands or to enhance recreation opportunities.

2.18.17 The SJNF and TRFO should convey title in lands or interest in lands:

- to states, counties, cities, or other federal agencies when a greater public interest exists;
- where small parcels intermingle with mineral or agricultural patents or are isolated physically and/or legally from other federal lands;
- where development by the private sector is in the greater public interest and does not adversely affect management of adjoining public lands;

- where exchange of lands brings into federal ownership higher critical resources or values;
- where reservation of interest mitigates (e.g., ROW for access road) the effects of disposal;
- in developed areas that have lost or are losing their public lands character;
- to expanding local communities where requested or where a greater public interest exists, such as lands surrounding the municipalities of Durango, Cortez, Silverton, Bayfield, Pagosa Springs, Mancos, Dolores, and other communities; and
- that are encumbered by special use permits, authorized substantial structural improvements, or occupancy trespass where a greater public need for the land no longer exists.

2.18.18 For BLM roads, where private use substantially dominates public use, maintenance should be authorized to the appropriate local government jurisdiction.

2.18.19 NFS roads, where private use substantially dominates public use, should be conveyed to the appropriate local government jurisdiction.

2.18.20 Cost effectiveness of invasive species management and hazardous material remediation must be evaluated when contemplating exchange or acquisition of lands or easements.

2.18.21 Jurisdictional transfers between agencies should be prioritized as follows: 1) to reduce duplication of effort, time, cost, or coordination by users and agencies; 2) to maintain or improve user access; 3) to decrease travel and enhance management; 4) to improve public understanding of management policy; and 5) to develop more effective and efficient work units.

2.18.22 Land use authorizations should avoid developed sites, unless the proposed use or occupancy is compatible with the purpose and use of the developed site.

2.18.23 Special use applications that can be reasonably met on private lands should not be approved on SJNF and TRFO lands unless it is clearly in the public interest.

2.18.24 Access to public lands should be acquired through:

- reciprocal grants, where available, from grantees receiving federal easements and ROWs;
- reservations (e.g., roads, trails, easements) in land disposals; or
- purchase or donation from willing landowners.

2.18.25 Existing trespass and encroachments should be resolved according to the following priorities: 1) where public safety is threatened, 2) where damage to resources and/or resource values is occurring, 3) where public access is interfered with, 4) where the encroachment is unintentional, and 5) where no substantial damage or management concern exists.

2.18.26 New or replacement telephone lines and electrical utility lines of 33 kV or less should be buried unless:

- visual quality objectives of the area can be met using an overhead line;
- burial is not feasible due to geologic hazard or unfavorable geologic conditions; or
- greater long-term site disturbance would result.

2.18.27 Overhead electric lines should use non-specular or “dulled” wire. All utility poles and hardware should be designed to blend in with the surrounding environment, as needed, in order to meet scenic quality objectives.

2.18.28 Vegetation treatments within corridors and along linear transmission facilities should meet facility safety requirements, provide for control of invasive species, and provide for revegetation in order to reduce visual impacts.

2.18.29 The following areas are identified as avoidance areas for ROW, communications sites, and other land use authorizations: all areas having VRM Class I or II, or moderate through very high SIO, lands managed for wilderness characteristics, Dolores River Canyon, Mesa Verde Escarpment, Perins Peak Wildlife Management Area, Chimney Rock National Monument, Falls Creek Archeological Area, Anasazi Archeological Area, and special botanical areas.

2.18.30 The following areas are identified as exclusion areas for ROWs, communications sites, and other land use authorizations: wilderness areas, WSAs, RNAs, wild segments of eligible WSR, and MA1.

2.18.31 Energy transmission facilities should be consolidated within existing corridors and along existing linear energy transmission facilities in order to reduce habitat loss, degradation, and fragmentation resulting from new construction.

2.18.32 Communication sites should be designed to minimize the visual appearance of structures. Communication antennas should use non-reflective surfaces or be painted, where possible, to minimize visual impacts.

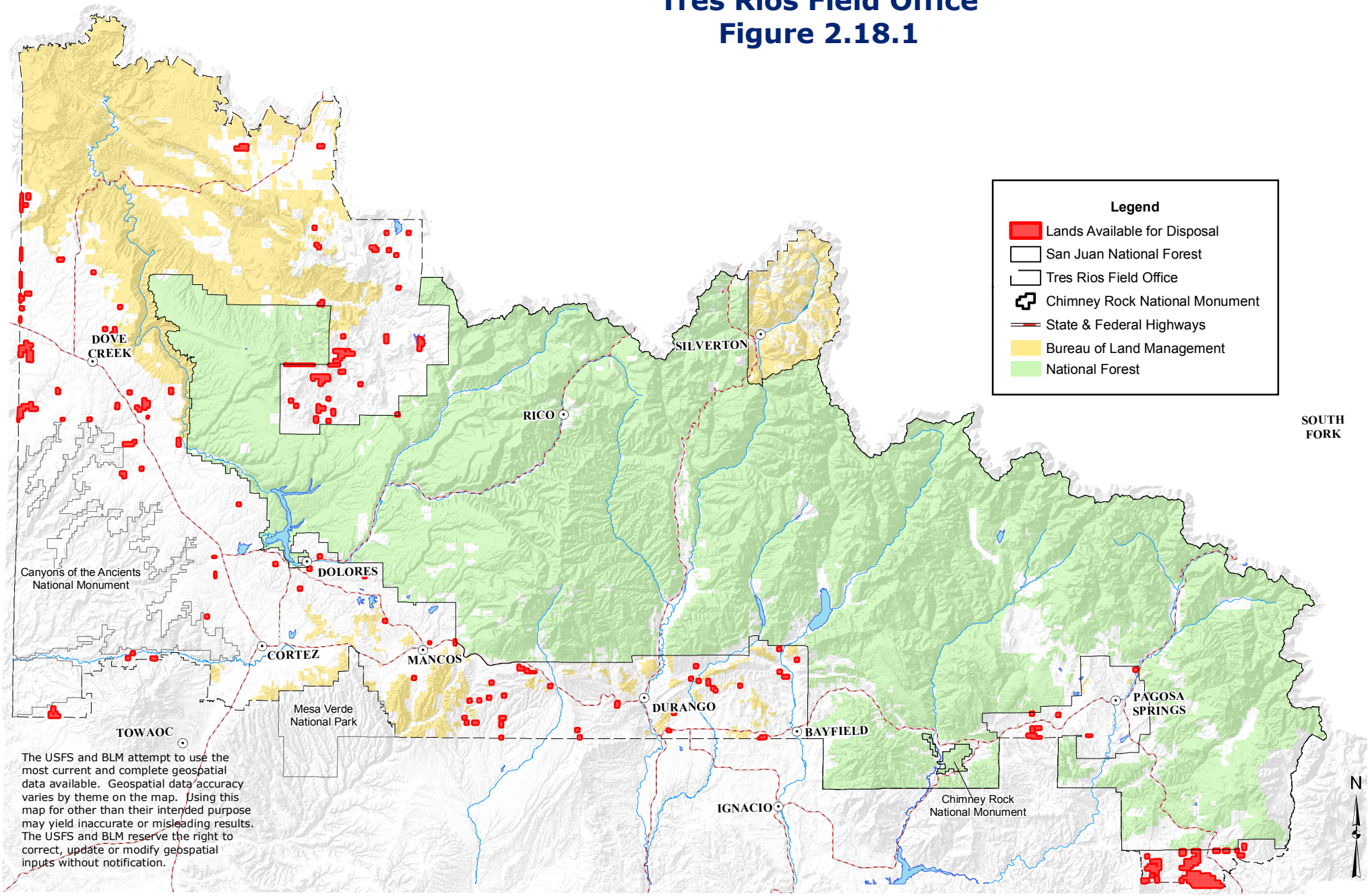
Additional Guidance

- FSM 1920, 2700, 2760, 5400, 5500, 5590
- FSH 2509.25, 2709, 5409
- BLM Manuals and Handbooks 2100, 2200, 2740, 2800, 2880, and 2900
- 43 CFR 2000

Lands Available for Disposal

Tres Rios Field Office

Figure 2.18.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
May 30, 2013

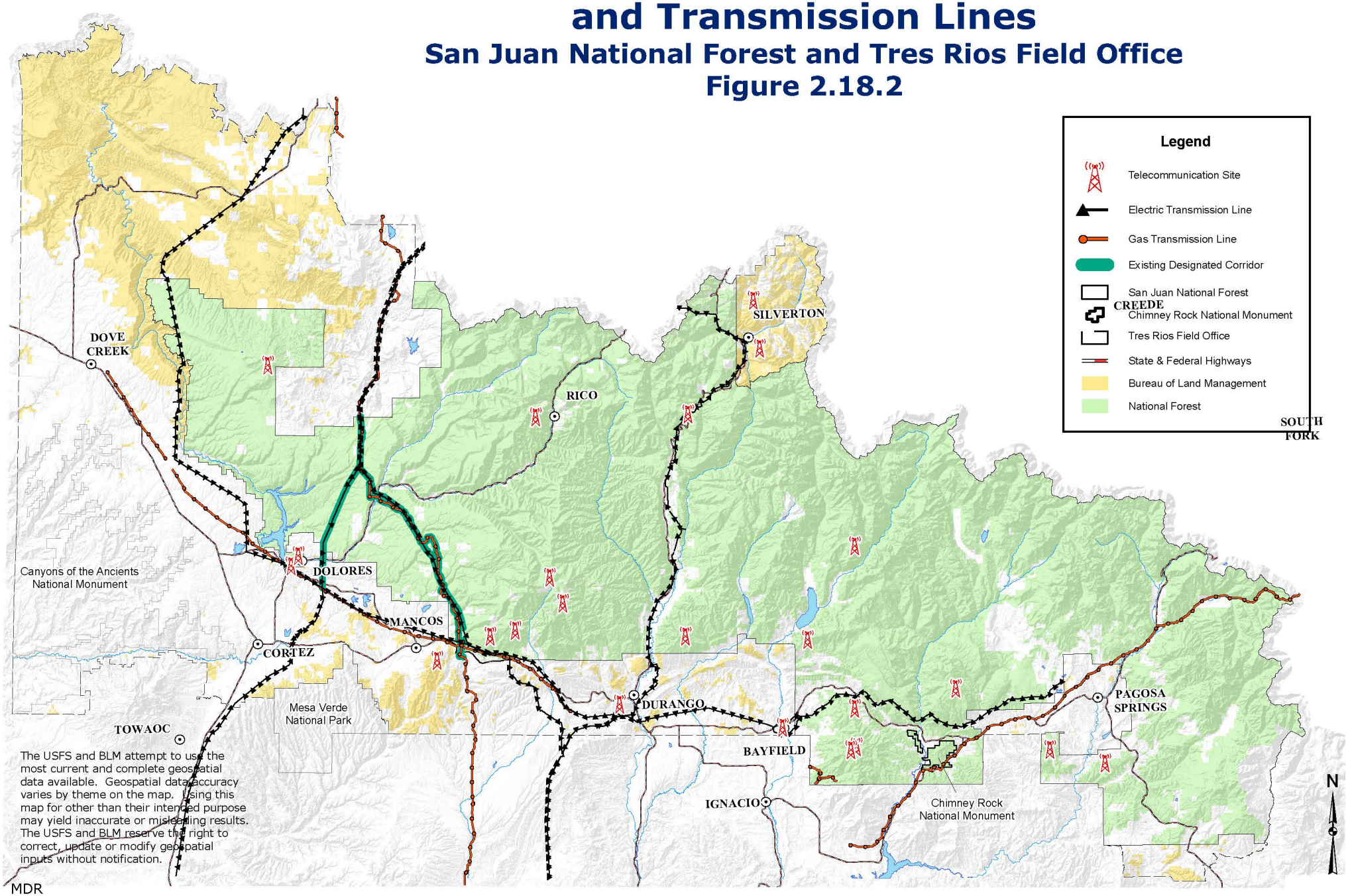
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Designated Utility Corridors, Communication Sites, and Transmission Lines

San Juan National Forest and Tres Rios Field Office

Figure 2.18.2



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
May 31, 2013

2.19 Minerals and Energy

Introduction

The Minerals Policy Act of 1970 states that it is the nation's policy to "foster and encourage private enterprise in the development of economically sound and stable industries, and in the orderly and economic development of domestic resources to help assure satisfaction of industrial, security, and environmental needs." The minerals and energy programs of both the USFS and BLM emphasize the orderly and timely development of mineral and energy resources of the public lands in order to benefit the nation while, at the same time, managing all resources for multiple uses. The planning area contains both known (historic and current) and potential (geologically favorable) areas for the occurrence of valuable mineral deposits and energy resources. An assessment of the SJNF portion of the planning area was completed by the U.S. Bureau of Mines (Neubert 1992) and updated by the USFS (Van Loenen and Gibbons 1994). The 1994 update included the results of field studies, literature review, sample collection and analysis, mine site visits, and review of USFS data. A similar report was not prepared for BLM lands. A Reasonable Foreseeable Development Scenario for oil and gas potential and development was completed for the planning area (BLM and USFS 2010). SJNF and TRFO managers will respond to proposals from industry, and from the public, for exploration and development of mineral and energy resources in a timely manner and will foster the development of mineral and energy resources on the public lands in compliance with all applicable laws and policies, including applicable environmental protection measures.

Federal mineral resources are managed under three categories with differing sets of laws and regulations. The three categories are locatable, saleable, and leasable minerals. In all cases, any activities related to the exploration or development of any kind of mineral on public lands must comply with other federal and state laws where applicable. These include laws such as the Clean Water Act, the Clean Air Act, and the ESA. The rights to access, explore, and develop locatable minerals, where open to the public, are guaranteed by the Mining Law of 1872. Rights to leasable and saleable minerals are granted through a process of leases, permits, and contracts.

Ownership of surface estate does not always coincide with the ownership of mineral estate. There may be cases where the surface was patented into private ownership, but all or part of the mineral estate remains in federal ownership (e.g., the Stock-Raising/Homesteading Act), or there may be cases where minerals are privately owned but the surface is federal. These instances are known as "split estate". In general, federal mineral estate is open to mineral entry unless it is withdrawn for specific reasons (e.g., wilderness areas, specified developed recreation sites). In some instances, minerals on federal lands acquired under certain authorities are only available for lease and are not subject to location under the Mining Law of 1872. Disposal of federal minerals by lease or sale is considered to be a discretionary federal action, whereas location of minerals by claimants under the Mining Law of 1872 is not discretionary. This means that in some cases, lands may be open to mining claims but administratively unavailable for leasing or mineral sale.

Federally owned mineral resources are managed under three categories with differing sets of laws and regulations:

- **Locatable Minerals:** These are subject to claim under the Mining Law of 1872, as amended.
- **Salable Minerals:** These are defined as "common varieties" of mineral. They are disposed of under a sale contract or free use permit under the Mineral Materials Act of 1947.
- **Leasable Minerals:** These minerals are subject to lease under the Mineral Leasing Act of 1920, as amended.

For the purposes of this document, locatable minerals (including precious and base metals, as well as uranium and vanadium), saleable mineral materials (including sand, gravel, and construction stone), and some leasable minerals (including coal, potash, and sodium) are discussed as "solid minerals." Oil and natural gas (including carbon dioxide [CO_2]) are discussed together as "fluid leasable minerals."

Locatable Minerals

Locatable minerals include precious metals such as gold and silver, base metals such as lead, zinc, and copper, as well as uranium and vanadium, and certain uncommon varieties of mineral materials and industrial minerals.

There is a high potential for the occurrence of uranium and vanadium along the Colorado-Utah border in an area known as the Uravan mineral belt (see Figure 2.19.1). This area has been home to extensive conventional underground room and pillar type mining dating back to before World War II. There is also some potential for copper in this area, and there is a large open pit copper mine in Lisbon Valley, Utah. Most of this mining occurs on BLM lands or private lands in desert landscapes. Other areas of interest for locatable minerals include the Rico-Dunton area (molybdenum, gold, silver, lead, zinc, copper), the La Plata Mountains (the California Mining District; silver, gold, lead, copper), the Silverton area (silver, gold, lead, zinc, copper), and the Needle Mountains (silver, gold, copper, uranium). Most locatable mineral sites are historic and not currently actively being mined. There are active placer mining claims along Mineral Creek and the Animas River downstream from Silverton, La Plata River drainage, the Dolores River downstream from Rico, and in the Slick Rock area.

Limestone valuable for chemical and industrial use is characterized as locatable. No development is currently active on SJNF or TRFO lands, but deposits of suitable limestone occur across the planning area. The Animas River valley may contain the most significant and accessible resources.

Solid Leasable Minerals

The planning area holds potential for a variety of solid leasable minerals (see Figure 2.19.2). These are subject to lease under the Mineral Leasing Act of 1920, as amended. They include most chlorides, sulfates, carbonates, borates, silicates, or nitrates of sodium or potassium and related products, phosphate and related minerals, and vein-type solid hydrocarbons (gilsonite, etc.). Hard rock minerals (i.e., minerals that would otherwise be locatable: gold, silver, copper, uranium, etc.) on acquired lands (lands acquired by the federal government, rather than typical public domain lands) may also be subject to leasing. Solid leasable minerals are extracted by a broad array of extraction methods, including surface and underground mining methods. The same or similar surface use restrictions may be applied to solid leasable minerals as those applied to fluid leasable minerals.

Coal

Coalbeds outcrop along the margins of the Paradox and San Juan Basins in the planning area. These outcrops are of late Cretaceous and early Tertiary age and have historically produced small quantities of coal.

Historically, small underground and surface mines to support local markets followed the northern edge of the San Juan Basin between Durango east to Pagosa Springs as well as around Dove Creek, Cortez, and Mancos (more or less along the U.S. Highway 160 and 491 corridors). These mines and related prospects are largely abandoned. Coal in the planning area is found in the Upper Cretaceous formations. From oldest to youngest, they are the Dakota Sandstone Formation, the Mesaverde Formation and Mesaverde Group, and the Fruitland Formation. Economical coal in the area is currently limited to the Chimney rock area and the west side (Cherry Creek, Hay Gulch, and La Plata Canyon areas) of the planning area. Deposits are generally low sulfur and high British thermal unit rated. Historically there have been many small operations that provided coal for heating and low volume industrial use.

Coal Unsuitability Assessments

Under the terms of the Surface Mining Control and Reclamation Act of 1977, the SJNF and BLM conducted coal unsuitability assessments to determine the suitability of lands for TRFO surface coal mining, leasing and development operations. Twenty unsuitability criteria and appropriate exceptions and exemptions were applied to the Durango, East Cortez and Menefee Known Recoverable Coal Resource Areas (KRCRAs) as identified by the USGS. In summary, 13,400 acres (9%) of the Durango KRCRA, 720

acres (25%) of the East Cortez KRCRA, and 80 acres (100%) of the Menefee KRCRA were identified as unsuitable for surface coal mining operations. Based on the unsuitability assessments (BLM 1985; SJNF 1983), 46,000 acres (31%) of the Durango KRCRA are identified as acceptable for further consideration for coal leasing, with an estimated reserve of 1.5 billion tons. One existing surface coal mine in the Durango KRCRA (Chimney Rock Coal Mine) with operations on both NFS and BLM lands was already in the lease extension application process during the unsuitability assessments. This application was denied for environmental reasons in 1985. Operations at the mine were terminated and the mine site has been reclaimed. The existing BLM and USFS coal unsuitability assessments for this LRMP revision found that the need does not exist to revise the assessments (Van Loenen and Gibbons 1997).

Oil Shale

The planning area has no known oil shale potential.

U.S. Department of Energy Uranium Lease Tracts

After World War II, the Atomic Energy commission was given the authority to withdraw federal lands for uranium leasing and development, through a variety of Congressional Acts and secretarial orders. Ultimately this became what today is known as the DOE Uranium Lease Program. Segments of land have been withdrawn from locatable mineral entry, but may be leased by the DOE for uranium and vanadium development. The surface resources continue to be managed by the BLM, and the lands remain open to mineral leasing and mineral material sales, so long as they do not interfere substantially with uranium leases and/or development. The DOE is the authorized agency responsible for uranium leasing, with the BLM acting as a cooperating agency. These are not leasable minerals as defined in the Mineral Leasing Act of 1920, and the BLM does not have final authority over how they are leased and developed.

Common Varieties of Mineral Materials

Disposal of common varieties of mineral materials is discretionary and may occur under a sale contract or free use permit. Common varieties of mineral materials are often called “saleable minerals.” They generally have a low unit value, but can still be quite valuable in bulk. In general saleable minerals include deposits of sand, clay, and stone used for building materials, aggregate, bulk fill, riprap, road surfacing, decoration, and landscaping. Having a secure source of sand, gravel, and crushed stone for things like road base, concrete aggregate, and other construction needs is essential to local economies, since distant haul costs can exceed the value of the materials themselves.

Areas with known resources or are favorable for resources of sand and gravel may contain material ready for use or suitable for screening, washing, or crushing to meet size or fine-material requirements. Areas of Quaternary age alluvium, colluvium and glacial drift, and river terrace deposits contain sand and gravel suitable for use with minimal treatment. Talus slopes of Late Cretaceous and Tertiary age igneous rock produce material suitable for crushing, lightweight aggregate, and dimension stone. Late Cretaceous and Tertiary age igneous intrusives produce dimension stone and large aggregate. Late Cretaceous sedimentary rock produces dimension stone and aggregates.

Current mineral material collecting areas are along roads and in areas of natural accumulation of rock (glacial deposits, talus slopes, and weathered outcrops). Quarries on SJNF and TRFO lands may be developed by private or commercial parties or local, state, or federal agencies. Presently there are approximately 20 permitted mineral materials sales sites across the planning area, with several additional small, one-time sales taking place annually. The largest scale site includes the Grandview deposit area, which may contain several decades of resources remaining at current consumption levels. Likewise, the deposits that host the permits for Montezuma and San Miguel Counties have at least two decades of resources remaining, and perhaps a decade for the Dolores County permit. Additional resources may be identified in new areas to meet the public’s needs, including new competitive and non-competitive commercial sales, free use permits to non-profit and governmental agencies such as counties and BLM/USFS use, and community pits/common use areas for the public to extract small amounts of mineral materials for personal use (gardening, patios, etc.).

Fluid Leasable Minerals

Oil and Gas

This program emphasizes the orderly and environmentally responsible development of oil and gas (natural gas and CO_2) deposits. These minerals are subject to disposal by lease under the Mineral Leasing Act of 1920, as amended. On USFS lands, mineral leases for federally owned minerals are issued by the BLM, after consent to lease by the USFS. This LRMP implements direction (under the Energy Policy Act of 2005 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987) for leasing of public lands.

The FEIS that accompanies this LRMP includes analysis necessary for offering specific lands for lease. The analysis discusses the availability of the SJNF and TRFO for oil and gas leases. In addition, it describes necessary protective stipulations to be attached to leases on SJNF surface lands, TRFO surface lands, and non-federal surface where the oil and gas estate is owned by the BLM. The LRMP does not authorize surface disturbance for oil and gas exploration or development. Surface-disturbing activities on leases will require additional environmental analysis and decisions. The oil and gas leasing decision in this LRMP will not apply to existing oil and gas leases. When those existing leases expire or terminate, the leasing decision in this LRMP will apply to any new leases issued.

Oil and gas deposits occur in sedimentary basins throughout the SJNF and TRFO. Areas of significant potential or known reserves and production are the Paradox Basin area (roughly the lands west of the Dolores River, which are high, moderate, and low for oil, shale gas, and conventional gas, respectively), the Northern San Juan Basin (approximately the area south of U.S. Highway 160 between Durango and Chimney Rock, which is high for coalbed methane, moderate for conventional gas), and the San Juan Sag (the area east of Pagosa Springs, high for oil). The central area of the planning area from the north rim of the San Juan Basin north to Silverton has no known oil and gas potential.

Development and production is underway in the Paradox Basin area north of Cortez, with exploration occurring northeast and south of Cortez. Significant development and production is underway and planned in the San Juan Basin. Exploration is intermittent in the San Juan Sag, with no production to date or planned.

In May 2010, the BLM Washington Office introduced the Master Leasing Plan concept (IM 2010-117) to promote a proactive approach to planning for oil and gas development (BLM 2010b). In November 2011, a group of environmental organizations submitted a proposal for a Master Leasing Plan to be developed for federal mineral estate within the Paradox Basin. Volume III, Appendix R details the BLM criteria, as established in IM 2010-117, for when a Master Leasing Plan is required, the criteria that the TRFO does and does not meet, and how the TRFO has addressed mitigations for natural and cultural resources, sensitive landscapes, and multiple uses while developing fluid mineral resources.

Oil and Gas Stipulations

All SJNF and TRFO oil and gas leases are subject to standard lease terms. These are the least restrictive terms under which an oil and gas lessee may operate. They meet Energy Policy Act direction to encourage development of federal energy resources. They require operators of oil and gas leases to minimize adverse impacts to air, water, land, visual, cultural, and biological resources and to other land uses and users, and to comply with all applicable laws, regulations, and formal orders of the agency managing the leased lands. With the exceptions noted below, leases with standard lease terms allow year-round occupancy and use of leased lands. These leases provide full access and the highest potential for discovery and development of oil and gas resources. Lease notices may be included to warn a potential lessee of the likelihood of such conditions, but the extent and restrictive nature of the conditions is still not known at the lease issuance stage. Operations may be prohibited on the affected parts of the lease, or costs may substantially increase due to protective measures required to protect the resource.

Special Lease Stipulations

Special lease stipulations are applied to an oil and gas lease if additional restrictions on the rights of lessees are required to protect environmental resources. Stipulations that would be applied to new oil and gas leases under this LRMP are described in Volume III, Appendix H. Areas included within the various stipulations are shown on Figures 2.19.3 through 2.19.5.

It is important to note that the special lease stipulations apply only to new leases (issued after adoption of this LRMP). Pre-existing leases are subject to the stipulations attached to them under the previous San Juan/San Miguel Resource Management Plan (BLM 1985), the Colorado Oil and Gas Leasing EIS (BLM 1991a) or SJNF Land Management Plan (USFS 1983). However, new development on existing leases must also comply with the current LRMP management direction. This direction is consistent with Interior Board of Land Appeals decisions (Yates Petroleum Corp., IBLA 2006-213, 2006-226 and William P. Maycock, IBLA 2008-197, 2008-200) which give the BLM discretion to modify surface operations to add specific mitigation measures supported by site-specific NEPA analysis undertaken during the development phase on existing leases (CO-2010-028). Any additional mitigation measures would need to be justifiable, still provide reasonable access for the lease holder and would be incorporated in a site-specific document.

Special lease stipulations for oil and gas operations are imposed at the time of lease issuance. Three general restrictive surface occupancy categories may also be used for oil and gas leases within the planning area, where justified for resource protection:

- **No Surface Occupancy (NSO):** Use or occupancy of the land surface for fluid mineral (oil and gas) exploration or development is prohibited to protect identified resource values. However, oil and gas under lands affected by NSO stipulation are legally available for extraction if extraction can be accomplished without occupying the surface (such as through directional drilling or otherwise accessing the reservoir from adjacent lands). Technological limitations and higher cost will affect the recovery of these resources, but they are available.

  The NSO stipulation is intended for application only where the TRFO or SJNF determines that the standard lease terms are insufficient to provide the level of resource protection necessary to protect the public interest. An NSO stipulation is not needed if the desired level of protection can be accomplished by relocating a proposed facility or activity within the lease area or by avoiding that activity for a specified period.

- **Controlled Surface Use (CSU):** Use or occupancy of the land surface for fluid mineral (oil and gas) exploration or development is allowed but identified resource values require special operational constraints that may modify lease rights. A CSU stipulation allows the SJNF or TRFO to require that a proposed facility or activity be relocated from the proposed location, or otherwise modified if necessary to achieve the desired level of protection. CSU provides operating guidance, but does not substitute for NSO or TL stipulations. CSU allows year-round occupancy and accessibility to leased lands while providing mitigation of effects on other resources.

- **Timing Limitation (TL):** Use or occupancy of the land surface for fluid mineral (oil and gas) exploration or development is prohibited during a specified period of the year. The scope of the TL stipulation goes beyond ground-disturbing activities to encompass any source of protracted or high-intensity disturbance that could interfere with normal wildlife behavior and adversely affect habitat use. The limitation is applied annually for a specified period. The TL stipulation does not apply to the operation and maintenance of production facilities unless the analysis demonstrates the continued need for such mitigation and that less stringent project-specific mitigation measures (such as Conditions of Approval) would not be sufficient. The TL stipulation provides for partial accessibility for a portion of the year and maintains the potential for extraction of oil and gas, but may increase costs due to timing constraints (such as a short operating season).

- **Not Available for Lease:** The following resources and areas are not available for lease on SJNF and TRFO lands—lands recommended for wilderness designation, WSAs; wild segments of suitable WSR, Chimney Rock National Monument, and the Anasazi and Falls Creek National Registered District.

Table 2.19.1 displays the availability of the SJNF and TRFO by acres of land for leasing and application of stipulations to leases. BLM acres are listed separately for BLM surface ownership and non-federal surface ownership.

Table 2.19.1: Acres Available for Leasing and Lease Stipulations

Federal Mineral Status	Acres
SJNF Lands (surface and mineral estate)	
Total National Forest Mineral Estate	**1,863,402**
Withdrawn from leasing (designated wilderness, Piedra Area)	509,954
Administratively Not Available for Lease	73,636
Total National Forest Available for Leasing	**1,279,811**
Available for leasing with NSO stipulation	876,266
Available for leasing with CSU stipulation	882,532
Available for leasing with TL stipulation	527,489
Available for leasing with standard lease terms	143,722
TRFO Lands (BLM surface and mineral estate)	
Total BLM Mineral Estate	**503,466**
Administratively Not Available for Lease	62,516
Total BLM Surface and Mineral Public Lands Available for Leasing	**440,896**
Available for leasing with No Surface Occupancy Stipulation	194,290
Available for leasing with CSU stipulation	401,232
Available for leasing with TL stipulation	321,435
Available for leasing with standard lease terms	22,734
TRFO Lands (BLM mineral estate only; non-federal surface)	
Total BLM Mineral Estate/Non-federal Surface	**319,957**
Administratively Not Available for Lease	0
Total BLM Mineral Estate/Non-federal Surface Available for Leasing	**319,957**
Available for leasing with NSO stipulation	88,548
Available for leasing with CSU stipulation	214,839
Available for leasing with TL stipulation	161,301
Available for leasing with standard lease terms	82,233

Orderly Leasing and Development of Oil and Gas Resources (SJNF)

Because the vast majority of the SJNF (approximately 93%) is currently not leased, the SJNF may employ a strategic approach for orderly leasing and development of oil and gas resources to be applied to SJNF lands only. This strategy would guide the pace and place of development by focusing leasing in areas within or adjacent to existing oil and gas development and would allow the surface managing agency to temporally guide the location of leasing activity to minimize impacts and conflicts with other multiple uses while still allowing full extraction of oil and gas resources. The intended outcomes and benefits of implementing an orderly leasing and development approach include but are not limited to:

- orderly and concentrated development, by encouraging industry to progressively develop along geologic mineral plays and trends;
- minimizing impacts to other resources from oil and gas leasing, by monitoring impacts and adjusting development conditions as necessary (resources that are primarily affected by pace or intensity of development include wildlife, air quality, water consumption, travel management and recreation); and
- economic efficiency by concentrating infrastructure.

An orderly leasing and development approach would likely apply to the portion of the Paradox Basin that falls within the SJNF, and would offer leases in phases based on an established set of criteria. For example, the first phase of lease offerings might include lands with the highest potential for oil and gas development; lands that are adjacent to leased lands; lands that contain existing oil and gas-related infrastructure; or lands that have been modified by other management and development activities where additional development would not cause significant new impacts. Criteria for offering leases for subsequent phases might require that monitoring data indicates that impacts within the previous phase are within or below the acceptable range; that development has occurred on a certain percentage of the spacing units of lands within the previous phase; or demonstration that a majority of geologically favorable lands within the previous phase have been developed.

There are many unknowns related to oil and gas exploration and future development. An orderly leasing and development approach would provide increased structure for industry and safeguard for unintended consequences while remaining adaptive to respond to new information for resource potential and development needs.

Desired Conditions

2.19.1 The planning area supports the exploration, production, and development of energy and mineral resources in a multiple use context, as is consistent with all applicable laws.

2.19.2 Mineral materials (including gravel and decorative stone) are available to support resource management needs, personal and hobby use, and commercial pursuits. Aggregate materials in the Ewing Mesa and Grandview area will continue to be developed as needed.

2.19.3 Ground disturbance from development of oil and gas fields is minimized by centralizing facilities, requiring multiple wells per pad, and minimizing the road system required to access facilities.

2.19.4 Reclamation of mineral exploration, development, and production activities is stable, long term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.

2.19.5 All oil and gas well fields starting at the field development stage and all other established well fields where practicable maximize the collocation of facilities to minimize construction footprints and reduce tailpipe emissions.

2.19.6 Oil and gas leasing and development activity on the SJNF occurs in an orderly manner to minimize impacts to lands and resources and increase efficiency of operations.

Objectives

2.19.7 Over the next 20 years, centralize facilities and engines to minimize the number of well head engines and optimize well engines so they use the minimum cumulative horsepower to obtain the maximum efficiency for all well fields beginning at the field development stage and all other established well fields where practicable.

2.19.8 Process requests for mineral materials in a timely manner consistent with LRMP direction and applicable laws. Identify areas suitable for and establish common use area(s) and/or community pits to provide sources of mineral materials to the public.

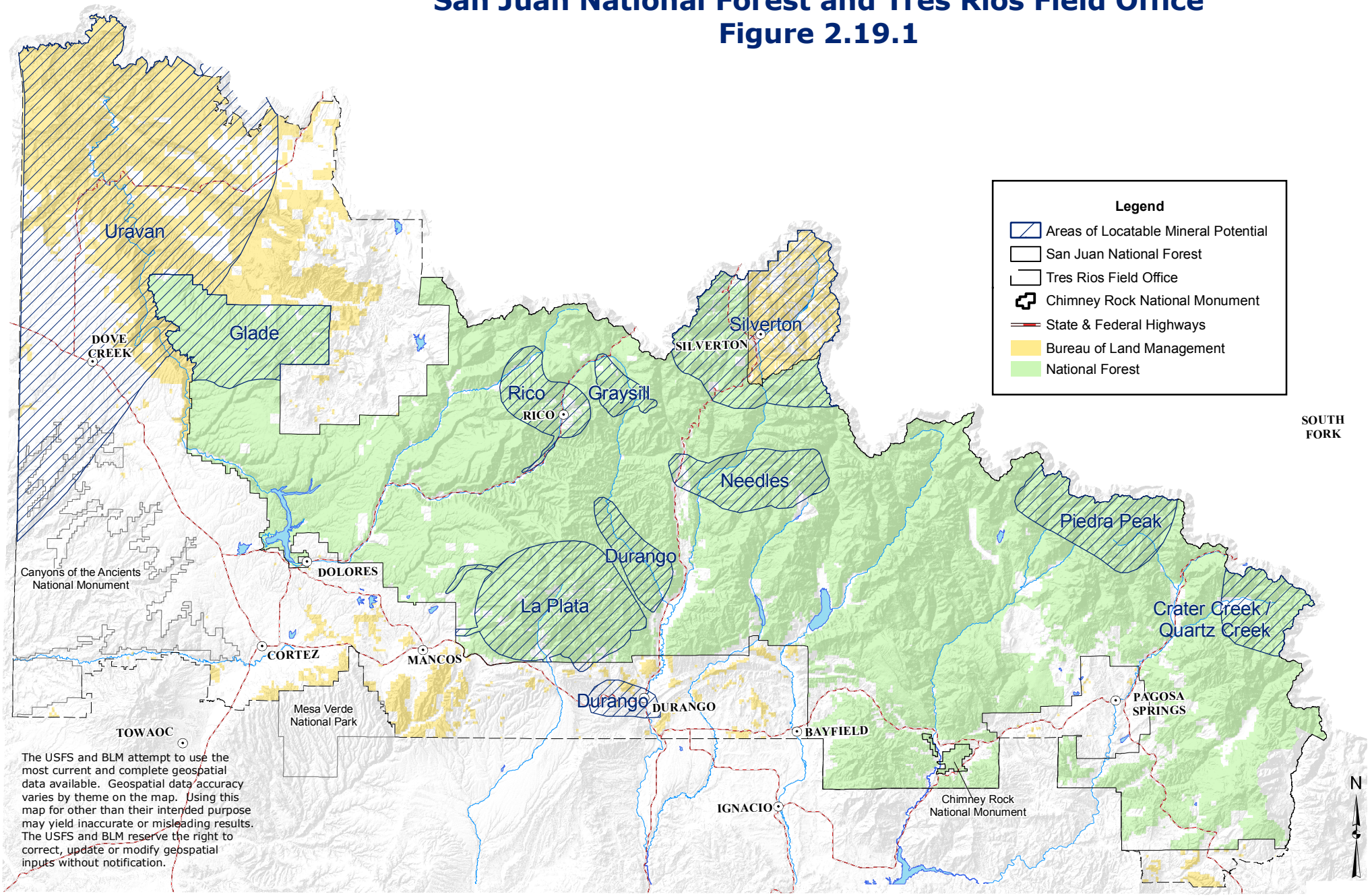
Additional Guidance

- Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (USDI and USDA 2007)
- BLM Handbook H-8410-1, Visual Resource Inventory
- BLM Handbook H-8431-1, Visual Resource Contrast Rating
- BLM 3809 Surface Management Handbook,
- Volume III, Appendix H, Resource Management Stipulations for New Oil and Gas Leases

Areas of Locatable Mineral Potential

San Juan National Forest and Tres Rios Field Office

Figure 2.19.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

JER
NAD 83, Polyconic Projection
May 28, 2013

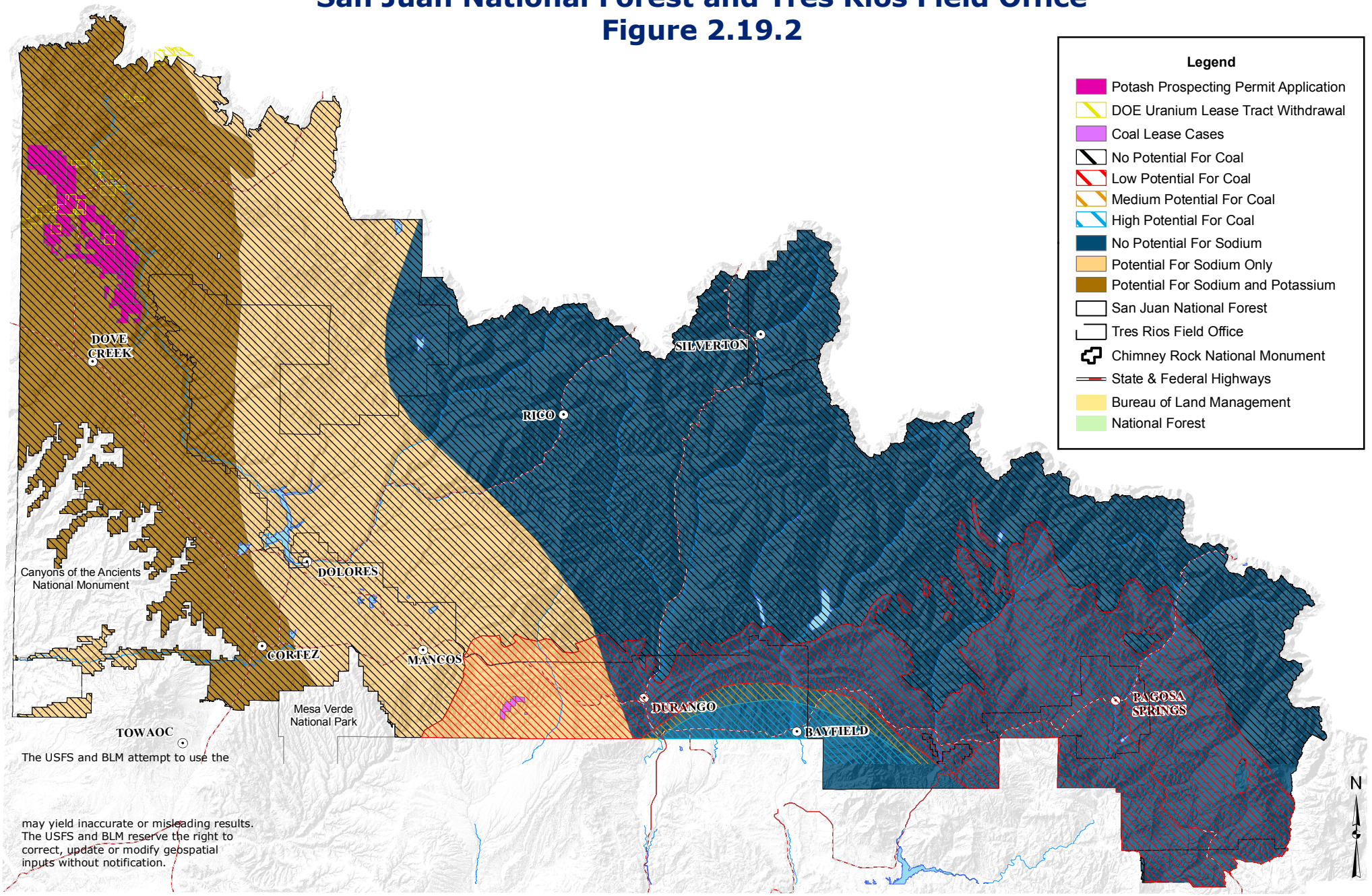
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Solid Leasable Minerals

San Juan National Forest and Tres Rios Field Office

Figure 2.19.2



The USFS and BLM attempt to use the best available data. Because of the scale of mapping and the inherent limitations of spatial data, this map may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial data and products without notification.

JER
NAD 83, Polyconic Projection
June 11, 2013

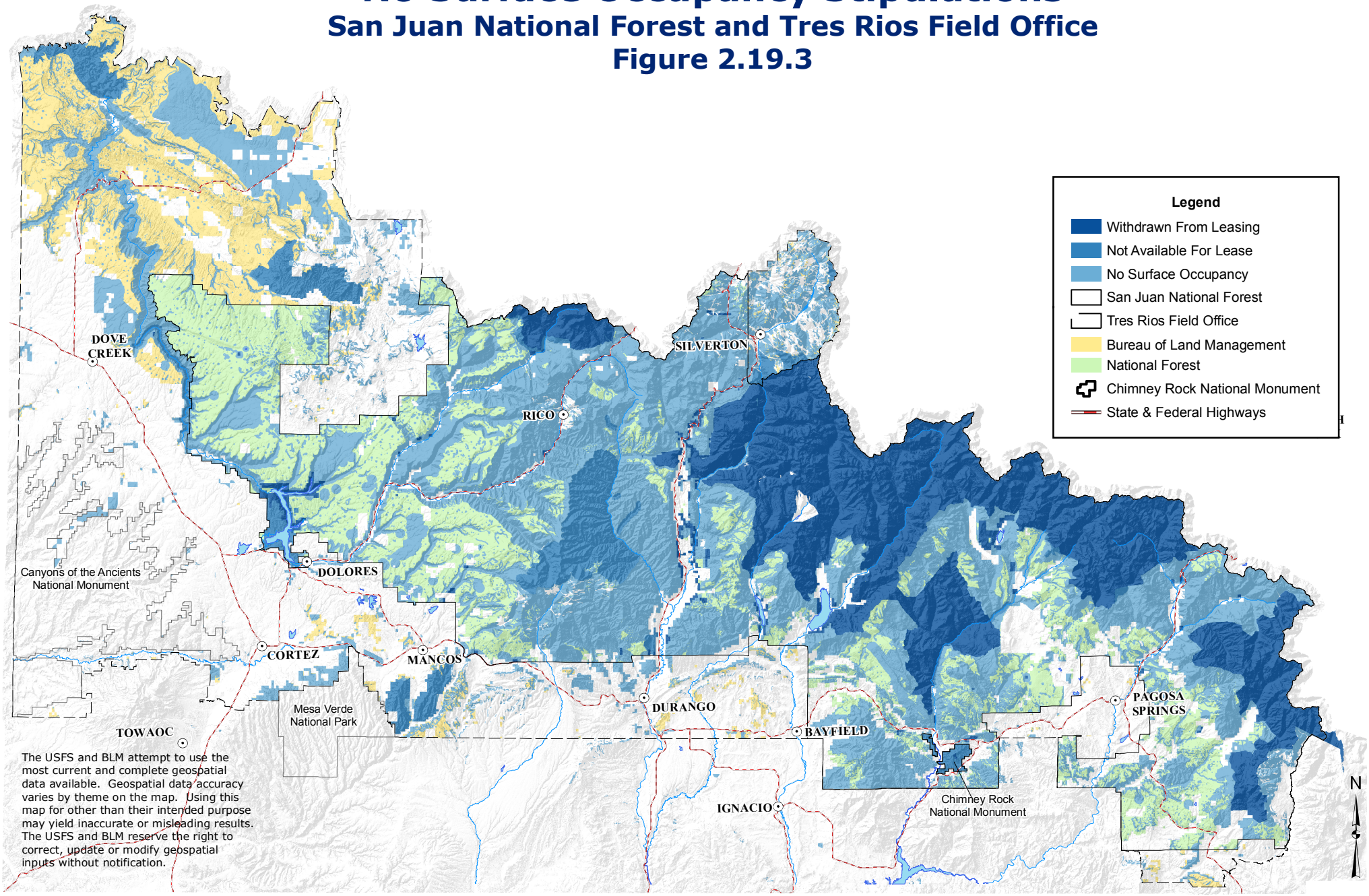
0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Oil and Gas Leasing Availability and No Surface Occupancy Stipulations

San Juan National Forest and Tres Rios Field Office

Figure 2.19.3



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

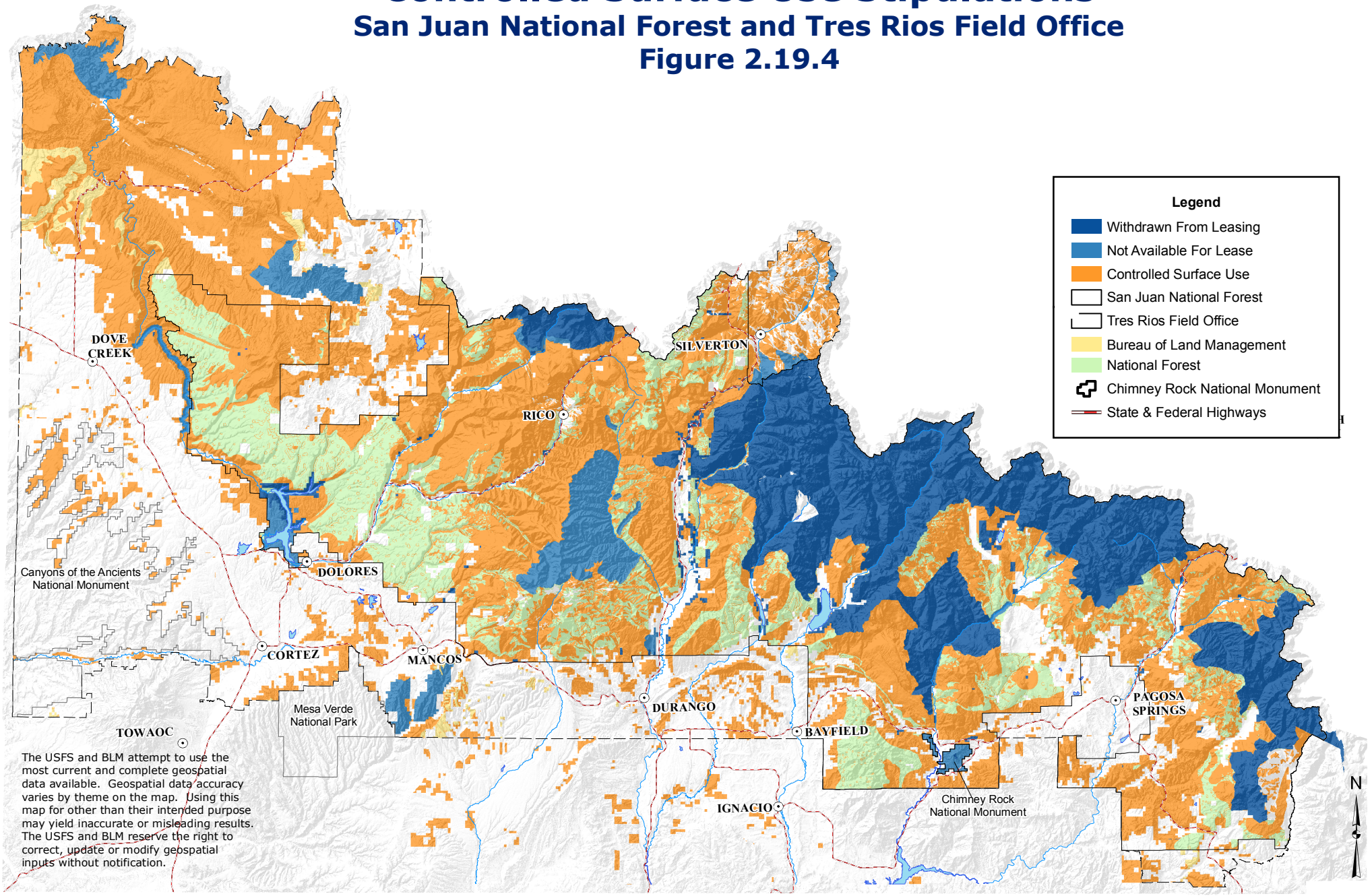
MDR
NAD 83, Polyconic Projection
July 10, 2013

0 10 20 40 Miles

Oil and Gas Leasing Availability and Controlled Surface Use Stipulations

San Juan National Forest and Tres Rios Field Office

Figure 2.19.4



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

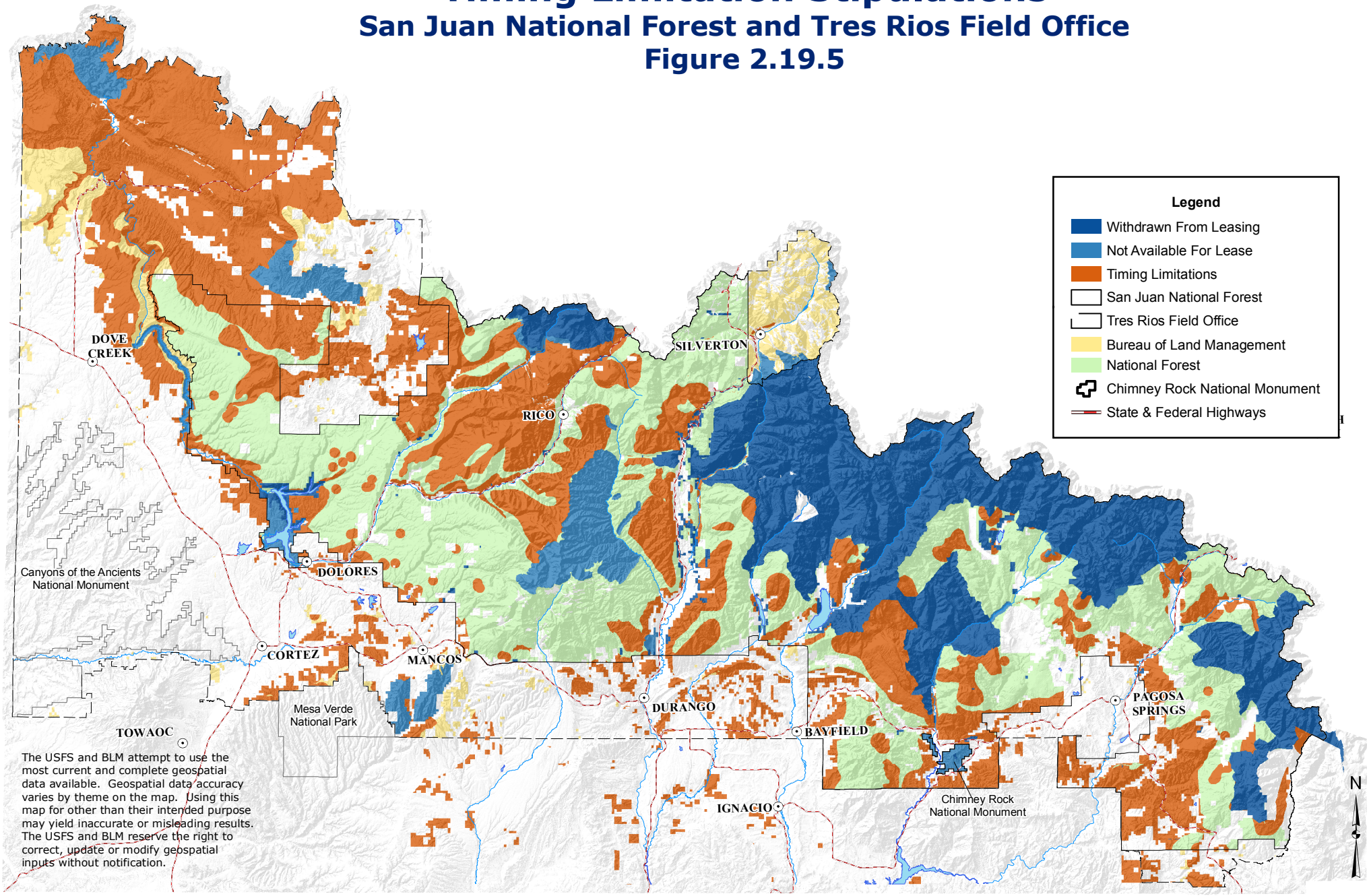
MDR
NAD 83, Polyconic Projection
July 10, 2013

0 10 20 40 Miles

Oil and Gas Leasing Availability and Timing Limitation Stipulations

San Juan National Forest and Tres Rios Field Office

Figure 2.19.5


Legend
Withdrawn From Leasing
Not Available For Lease
Timing Limitations
San Juan National Forest
Tres Rios Field Office
Bureau of Land Management
National Forest
Chimney Rock National Monument
State & Federal Highways
DOVE CREEK
SILVERTON
RICO
DOLORES
Canyons of the Ancients National Monument
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR

July 10, 2013

0 10 20 40

2.20 Alternative Energy: Geothermal, Wind, Solar, Biomass

Introduction

Alternative energy sources on public lands play an important role in meeting national goals of reducing America's dependence on foreign oil by promoting the development of geothermal, wind, solar, and biomass energy on public lands. Studies conducted by the National Renewable Energy Lab and the Western Governors Association have identified areas that have potential for utility scale development of these resources. For the planning area the highest potential is in providing biomass from forest and fuels management projects in support of local generation facilities. Potential also exists for direct use of geothermal and solar resources with minimal potential for utility scale production. The LRMP incorporates this information and guidance developed nationally to govern these uses.

Geothermal

Geothermal resources within the planning area are of low or medium temperature at shallow depths. Geothermal fluid resources that occur within the planning area (as well as in the surrounding areas) include warm water emanating from geysers, springs, and wells. Most warm springs are located near faults that serve as conduits for upward flow of groundwater that is heated by deep circulation from mainly volcanic sources. Except for the town of Pagosa Springs (where hot water from hot springs is currently used in order to heat buildings and public sidewalks), the thermal springs are at present either undeveloped or developed for recreational and therapeutic uses in private and public pools. Only three springs are on public lands: Geyser, Piedra, and Rainbow.

The BLM and USFS, in cooperation with the DOE, jointly prepared a PEIS for Geothermal Resource Leasing (BLM and USFS 2008) pursuant to Section 225 of Public Law 109-58 (Energy Policy Act of 2005). Decisions included in the Record of Decision for this PEIS:

- Allocated BLM lands as open to be considered for geothermal leasing or closed for geothermal leasing, and identified those National Forest System lands that are legally open or closed to leasing;
- Developed a reasonably foreseeable development scenario that indicated a potential for 12,210 megawatts (MW) of electrical generating capacity from 244 power plants by 2025, plus additional direct uses of geothermal resources in the western states; and
- Adopted stipulations, BMPs, and procedures for geothermal leasing and development.

These actions were implemented as BLM resource management plan amendments for 114 land use plans; the decision did not amend any USFS land use plans. The ROD amended the San Juan/San Miguel Resource Management Plan (BLM 1985) to show 496,439 acres open and 146,597 acres closed to geothermal leasing within the TRFO's jurisdiction. The amendments adopted the stipulations and leasing procedures provided in Chapter 2 and the BMPs provided in Appendix B of the PEIS. Specific areas of BLM-administered lands have not been identified for utility-scale electrical production from geothermal sources in Colorado. The USGS (2008) estimated a mean probability of electrical power generation for identified geothermal resources on all lands in Colorado during the next 30 years at 30 MW, with a total low to high range of 8 to 67 MW (USGS 2008). Current plans for development within Colorado continue to focus on direct use, particularly for recreation, therapeutic properties, and aquaculture, which would typically occur on private land within the planning area.

Wind

In October 2003, the BLM initiated the preparation of a Wind Energy Development PEIS (BLM 2007b) to address the impacts of the future development of wind energy resources on public lands. The DOE's National Renewable Energy Laboratory (NREL) assisted the BLM in the preparation of the PEIS and provided an inventory assessment of wind energy resources on public lands in the western United States. Appendix B of the PEIS includes wind resource potential maps for each BLM field office. The PEIS ROD addressed the amendment of individual BLM land use plans and established both policies and BMPs regarding the development of wind energy resources on BLM-administered public lands. The PEIS

used models run by the NREL that showed only a small portion of BLM-administered lands within each Colorado county are likely to be involved in wind energy development during the next 20 years. The PEIS did not amend the San Juan/San Miguel Resource Management Plan.

The DOE's Wind Program and the NREL published a Colorado 50-Meter Wind Map that shows wind speed estimates at 50 meters above the ground and depicts the resource that could be used for utility-scale wind development (DOE and NREL 2013). The map indicates that Colorado has wind resources consistent with utility-scale production. Significant contiguous areas of good resource with embedded regions of excellent resource are found in the eastern quarter of the state. For the planning area, the identification high potential wind resources at the tops to the ridges in the San Juan Mountains with the rest of the BLM lands having low potential for utility-scale development does not warrant consideration of the high ridges for commercial development of wind resources. Significant visual and other resource concerns exist for development at those higher elevations. The Western Renewable Energy Zones – Phase 1 Report (Western Governors Association and U.S. Department of Energy 2009) reiterated these findings and did not identify potential for wind or solar development within the planning area.

Solar

BLM land use plans analyze and consider the potential for solar energy development and the local environmental or community issues related to making lands available (or not available) for commercial solar energy development.

The BLM, in cooperation with the DOE, signed a Solar Energy Development PEIS and ROD on October 12, 2012 (BLM and DOE 2012). The ROD excluded all lands within the planning area for solar development for projects 20 MW or greater, except for 12,105 acres of variance areas within the TRFO's jurisdiction. Solar applications for projects 20 MW or greater filed within the variance areas are subject to the requirements in the ROD, including required design features. SJNF lands within the planning area lack characteristics necessary for solar energy development.

Biomass

The Healthy Forests Initiative, the National Fire Plan (USFS and USDI 2001), and the joint federal-state 10-year Comprehensive Strategy Implementation Plan all call for biomass and wood-fiber utilization as an integral component of restoring our nation's precious forests, woodlands, and rangelands. Biomass utilization can also meet a key objective of the National Energy Policy by contributing to diversification of the nation's energy supply.

An agreement between the USDI, DOE, and USDA was enacted to jointly promote the utilization of biomass to meet management objectives on public lands. Under this agreement, when ecologically, economically, and legally appropriate, and consistent with locally developed land management plans, agencies were directed to:

- foster communication as to how harvest and utilization of woody by-products can be an effective restoration and hazardous fuel reduction tool that delivers economic and environmental benefits and efficiencies;
- promote consideration of woody biomass utilization from restoration and fuels treatment instead of burning or other on-site disposal methods; and
- encourage development of new mechanisms that increase the benefits and efficiencies of woody biomass utilization (USDA et al. 2003).

Desired Conditions

Geothermal

2.20.1 Stipulations included in the Geothermal Resource Leasing PEIS and ROD (BLM and USFS 2008) serve as the minimal level of protection and are adopted as applicable to this LRMP. The Authorized Officer retains the discretion to issue stipulations in order to mitigate the impacts on other land uses or resource objectives. In general, oil and gas lease stipulations identified in Appendix H of this LRMP would be applied as appropriate.

2.20.2 The Final Geothermal Resource Leasing PEIS and ROD (BLM and USFS 2008) may be used to provide suitable information to facilitate subsequent consent decisions for leasing on NFS lands in the planning area and to provide environmental analysis to assist future NFS land use decisions by providing possible land use allocations and stipulations for geothermal leasing.

2.20.3 **Suggested BMPs:** Mitigation measures included in Appendix B of the Geothermal Resource Leasing ROD (BLM and USFS 2008) would be applied to the development of geothermal resources on federal lands.

Solar

2.20.4 Project planning and design incorporate an appropriate analysis to determine the feasibility, cost and benefits of using photovoltaic systems on administrative facilities, range improvements, resource monitoring, public safety, and recreation projects.

2.20.5 ROW applications for solar energy development incorporate BMPs and provisions contained in the Solar Energy Development PEIS. Solar energy development is authorized by ROW grants.

Biomass

2.20.6 Forest vegetation management includes evaluation opportunities for harvesting and removal of biomass to meet treatment objectives.

2.20.7 Potential partners are involved and collaborate in exploring economically efficient means for biomass utilization.

Additional Guidance

Geothermal Regulations

- 43 CFR Part 3200: The BLM issued final geothermal leasing regulations on May 2, 2007; the regulations were prepared pursuant to the provisions of the Energy Policy Act of 2005
- Geothermal Resource Leasing PEIS/ROD (BLM and USFS 2008)
- Geothermal BMPs from the BLM and USFS; Record of Decision for Geothermal Resource Leasing in the Western US; December 2008, Appendix B

Wind

- The BLM's Wind Energy ROD - Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments, December 2005
- Wind ROD BMPs: BLM Wind Energy Program Policies and Best Management Practices
- BLM IM 2009-043, Wind Energy Development Policy (BLM 2009)

Solar

- BLM IM 2007-097, Solar Energy Development Policy (BLM 2007c)
- The Solar Energy Development PEIS is being prepared by the DOE, Energy Efficiency and Renewable Energy Program, and the BLM; the PEIS will document solar guidance and BMPs

Biomass

- The USFS Woody Biomass Utilization Desk Guide, National Technology and Development Program 2400—Forest Management, September 2007 (USFS 2007)

2.21 Abandoned Mine Lands and Hazardous Materials

Introduction

The Abandoned Mine Lands (AML) program is concerned with mitigating the effects of abandoned mines on both the environment (notably mine drainage affecting water quality) and the physical safety of visitors and workers. Hard rock mining for gold, silver, and other metals began in the late 1800s and was prevalent throughout the mountainous areas of the planning area, with concentrations around Silverton and Rico. Uranium was mined in the western portion of the planning area in the Uravan Mineral Belt. There are also a few scattered abandoned coal mines.

Work on the AML program began in 1994 with an inventory of abandoned mines on BLM and NFS lands. The physical safety closure work has been ongoing since then. On uranium tracts leased to the DOE, much of the closure work has been done by the DOE. In remaining areas, the BLM/USFS has partnered with Colorado Division of Reclamation Mining and Safety to close dangerous hard rock, uranium, and coal mines.

Water quality work also began in the mid-1990s when the Colorado Water Quality Control Division proposed a watershed risk-based approach to abandoned mine remediation. This consists of four major stages:

1. statewide analysis and watershed prioritization;
2. watershed characterization and mine prioritization;
3. mine-site characterization and remediation; and
4. post-remediation monitoring.

This approach was used by state agencies and federal land management agencies to identify the upper Animas River watershed as ranking at the top of the high-priority watersheds. Funding for AML water quality projects began in 1997 with two pilot projects: the upper Animas River watershed in Colorado and the Boulder Creek watershed in Montana.

The Animas River Stakeholders Group (ARSG) was formed in 1996 to take the lead in the Animas watershed characterization and remediation. The group's members come from the public and private sectors. Their mission is to improve water quality and habitat along the Animas River. Over the last decade, the ARSG has received grants and professional support from state and federal agencies, as well as from private interests for the characterization and remediation of the watershed. A major accomplishment of the ARSG was production of the Use-Attainability Analysis of the Upper Animas Watershed (ARSG 2001). This report includes watershed characterization, mine clean-up prioritization, and remediation plans. Watershed characterization provided baseline scientific information and enabled the reduction of necessary mine clean-ups from 1,500 to 100 (or less). Water quality objectives were also developed. Since the development of the Use-Attainability Analysis of the Upper Animas Watershed, hydrologic conditions have changed, and additional characterization and prioritization continues.

Reclamation undertaken so far has resulted in three repositories on or partially on BLM lands, where mine waste has been located and contained. These repositories are at the Henrietta, Lark, and Mayday mines (Figure 2.21). These locations will be protected from future disturbance or other accommodations made so that wastes are effectively contained.

Another area with a high concentration of hard rock mining and water quality impacts is the area around Rico, which is in the Dolores River watershed. The State of Colorado and the EPA have overseen voluntary clean-ups or conducted enforcement actions on some mine areas on private land, as well as on mixed-ownership sites.

Most of the hazardous materials incidents within the planning area are the result of transportation accidents on state and/or federal highways. Trucking accidents can result in spills of fuel (or of any hazardous products that the truck was carrying). These incidents are the responsibility of the transportation company to clean up. Clean-ups within the highway ROWs are under the jurisdiction of the Colorado State Patrol for state and federal highways, and under the jurisdiction of the local sheriff's departments for county roads. When spills go beyond the ROW, or impact USFS or BLM resources, the land management agency becomes involved. Illegal dumping on the SJNF and TRFO is also a potential hazardous materials issue. In addition, hazardous materials can also be related to operations conducted or authorized by the USFS and BLM (including the use of pesticides, fuels, and/or lubricants).

The SJNF and TRFO will continue to update the inventory of abandoned mine sites within the planning area in order to identify, prioritize, and track reclamation needs and progress. Reclamation of abandoned mine lands will continue and will be prioritized based on the degree of threat to human health, the environment (especially to water quality), and public safety. Known hazards at AML sites will be remediated, with the highest priority given to sites near high visitor use areas (including developed campgrounds and recreation areas), sites located near residences on adjacent private property, sites impacting water quality, and sites close to frequently traveled roads in the planning area.

All mine reclamation and emergency response actions for releases of hazardous substances will be conducted in accordance with CERCLA. Closure actions related to physical hazards will be conducted under NEPA. Precautionary measures will be taken in order to guard against releases and/or spills into the environment for all USFS- and BLM-authorized management activities that involve hazardous materials. Hazardous materials and waste management policies and controls will be integrated into all SJNF and TRFO programs.

Desired Conditions

2.21.1 Abandoned mine reclamation within the planning area does not negatively impact water quality and historic resource protection.

2.21.2 Abandoned mines do not endanger the environment, wildlife, the public, or employees.

2.21.3 Mine waste repositories are protected and physical safety closures are protected or replaced during any BLM- or USFS-authorized actions.

2.21.4 USFS- and BLM-authorized actions occur without causing hazardous material spills or waste contamination.

2.21.5 Over the life of the LRMP, AML closures for human safety at sites supporting bat populations include structures (such as bat gates) designed to provide for continued use as bat habitat.

2.21.6 The AML program coordinates with affected parties, partners, and stakeholder groups on AML projects.

Objectives

2.21.7 Stabilize, rehabilitate, or restore AML on priority sites on an annual basis in order to improve water quality and watershed condition.

2.21.8 Annually close or mitigate 10 abandoned mine features on BLM that pose a high safety hazard to the visiting public and/or to employees, until all high-priority sites have been addressed.

2.21.9 On all TRFO and SJNF lands, close or mitigate high-priority sites over the life of the LRMP. On SJNF lands, newly discovered sites will be prioritized for closure or mitigation based on hazard.

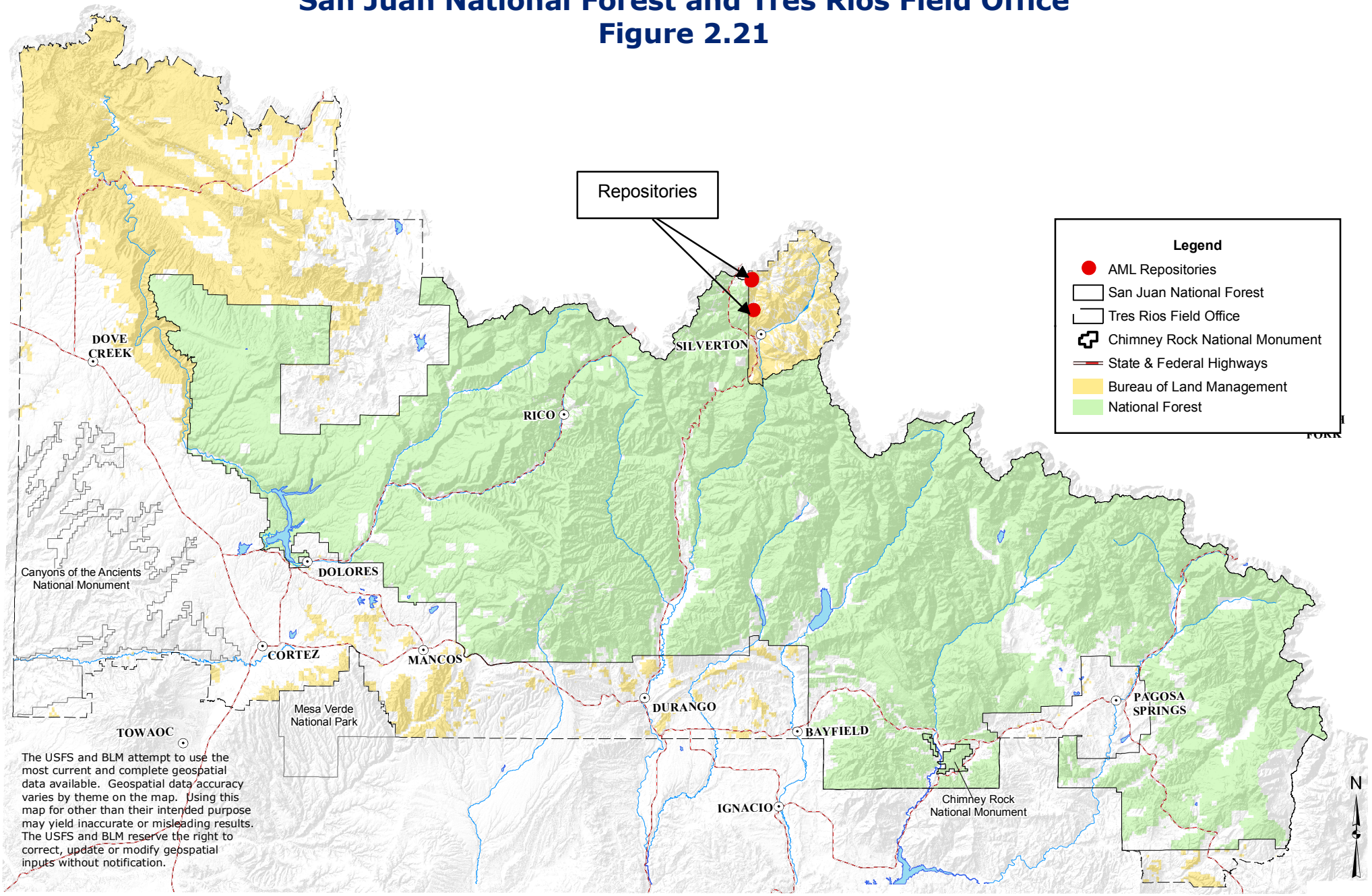
Additional Guidance

- FSM 2160 (USFS 1994)
- BLM Handbook 3720-1
- USFS/BLM AML policy
- BLM CERCLA Response Actions Handbook 1703-1
- USDI Solid Waste and Hazardous Materials Management Compliance Handbook (1995)

Abandoned Mine Lands Repositories

San Juan National Forest and Tres Rios Field Office

Figure 2.21


Repositories
Legend
AML Repositories
San Juan National Forest
Tres Rios Field Office
Chimney Rock National Monument
State & Federal Highways
Bureau of Land Management
National Forest
DOVE CREEK
SILVERTON
RICO
DOLORES
Canyons of the Ancients National Monument
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
PAGOSA SPRINGS
IGNACIO
Chimney Rock National Monument
N
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JER
NAD 83, Polyconic Projection
April 25, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

2.22 Interpretation and Conservation Education

Introduction

An important goal of the USFS and BLM is to help people understand, appreciate, and use their public lands. Due to the remote location, varied geography, and multiple-use patterns, the planning area requires a vibrant and focused interpretive program in order to support this goal. In order to protect invaluable cultural and natural resources, interpretive services and conservation education must be an integral part of implementing and maintaining the identity of the area, and implementing an effective resource management strategy that educates and informs visitors. The interpretive and conservation education program plays a critical role in effective resource management and public appreciation of natural and cultural resources. A very dynamic interpretive and conservation/education program will offer a venue designed to create emotional and intellectual connections between people and the nature and culture of the planning area.

Currently there are many facilities and services in place that deliver interpretive and conservation education services to the public. The USFS and BLM will sharpen their focus in order to more meaningfully deliver what the public wants to know, and needs to know, about the land management agencies, their mission and programs, and stakeholder responsibilities.

Strategies under this program should be designed to ensure consistent, coherent, and effective communication between the public and program managers through a variety of venues. Communication topics and themes will be identified that are of interest to the public, as well as those that will effectively convey important agency information and portray a quality image. Communication venues will target a diverse public. Important program outcomes will include increased public understanding of natural and cultural resources and their management, agency understanding of public viewpoints, cooperation in public land management, public understanding and compliance with public land regulations, and stewardship of public lands. The integration of interpretive services with public affairs and other staff areas will be fostered. Local, regional, and national partnerships with tourism and outdoor recreation providers and educators are critical in helping meet stewardship and visitor experience goals and expectations.

Desired Conditions

2.22.1 The public benefits from a public lands interpretive and education strategy that reflects USFS and BLM priorities and key public information needs. The public understands the mission of the BLM and USFS and their diverse cultural and natural resource management priorities and exhibits effective stewardship behavior on TRFO and SJNF lands.

2.22.2 Messages are consistent and effectively delivered to the public, reaching a wide variety of age, gender, class, ethnic, and cultural groups.

2.22.3 Resource management messages are articulated in all education and interpretive products, programs, and public contacts.

2.22.4 A wide variety of information, education, and interpretive venues are available through various media so that people can easily access information about recreational opportunities and resources.

2.22.5 All visitor information services, public affairs, interpretation, and conservation education functions of the USFS and BLM have a unified and clear communication strategy.

2.22.6 All TRFO and SJNF personnel play a role in public communications, in terms of offering conservation education, interpretation, public affairs, and visitor information services.

2.22.7 The TRFO and SJNF foster research, education, and interpretation of the area's rich natural and cultural heritage.

2.22.8 Effective interpretation and conservation education, as well as proactive land stewardship, are accomplished with a wide range of partners (including commercial outfitters/guides; permittees; volunteer groups; local, state, tribal, and other federal agencies; interested individuals and organizations, etc.).

2.22.9 Public education opportunities, through interpretation and conservation education programs, promote ethical and non-limiting use of wildlife resources within the planning area.

CHAPTER 3 – AREA DIRECTION

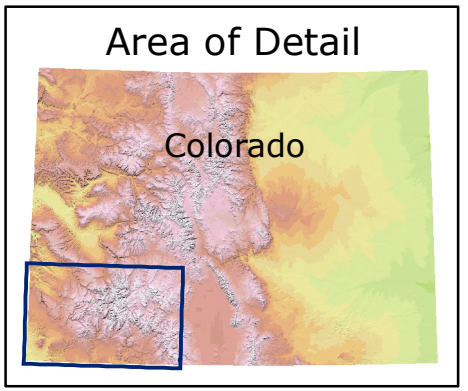
This chapter contains management direction for geographic areas, management areas (MAs), special areas and designations on TRFO and SJNF lands that have unique resources or management conditions. Four geographic areas are identified that describe the social, economic, and environmental settings of the TRFO and the three administrative ranger districts of the SJNF. MAs, which apply only to SJNF lands, describe the intensity of management, overall appearance and activities that can be expected within each MA. Specially designated lands are formal designations within each agency, including suitable WSR, RNAs, ACECs, and several other special designations. Also included in this chapter is direction for other areas with unique resources and management conditions such as lands managed for wilderness characteristics, the Dolores River Canyon, and the HD Mountains. All areas described in this chapter are identified on associated maps.

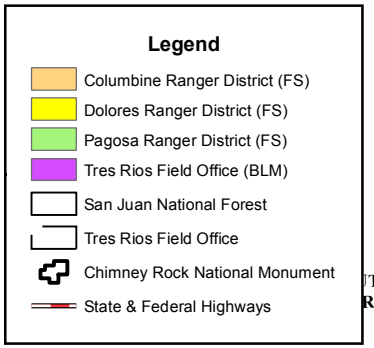
In addition to desired conditions and objectives, many of the areas in this chapter include “allowable use” tables. These tables portray the suitability determinations made under the grazing, timber, and travel programs in Chapter 2 as they apply to specific areas, and also identify additional uses that are listed as allowable, restricted, or prohibited. Restricted activities are those that are allowed, but may only be allowed during certain times of the year, within specific areas, or under specific conditions. The activities in the tables are described below.

- **Fire Managed for Resource Benefit:** This activity includes managing natural fires in order to achieve a management objective and/or a desired condition. Wildfire is only part of an overall appropriate response. The application of fire managed for resource benefit will always depend on site-specific conditions, current and predicted future weather, and fuel conditions.
- **Prescribed Burning:** This activity includes igniting fires in order to achieve a management objective and/or a desired condition. Managed active burning will be prescribed and monitored to burn at specified intensities over a defined area.
- **Mechanical Fuels Treatments:** This activity includes any method to alter live or dead vegetation with hand tools or by machine (including thinning with chainsaws or any commercial machine, shredder, chipper, or similar equipment) to break up fuel connectivity, including removal of fuels from treatment sites.
- **Timber Production:** This activity involves the removal of wood fiber for commercial-utilization purposes. Harvesting for timber production purposes is scheduled and regulated.
- **Timber Harvesting as a Tool:** This involves the removal of wood fiber to achieve management objectives and/or desired conditions. If an area is suitable for timber harvesting as a tool but not suitable for timber production, timber harvesting would only occur in order to achieve a management objective and/or a desired condition (including, but not limited to fuels reduction and/or wildlife habitat improvements).
- **Commercial Use of Special Forest Products and Firewood:** This includes firewood, Christmas trees, tree transplants, mushrooms, medicinal herbs, boughs, and cones. Commercial use would occur through a permitting process. Personal use (use not involving the sale of forest products) may require a permit.
- **Land Use ROWs, Special Use Permits, and Utility Corridors:** This includes energy corridors, linear transmission, communication sites, and other land use authorizations.
- **Livestock Grazing:** This includes permitted livestock grazing as authorized by an agency grazing permit on designated grazing allotments or areas outside grazing allotments where livestock grazing could be used as a vegetation management tool. Allotments contain lands that are both suitable and unsuitable for livestock grazing. Stocking rates would be based only on lands suitable for livestock grazing as determined at the project level.

- **Facilities:** This includes infrastructure and structures placed on public lands for resource protection, administrative use, and/or public enjoyment.
- **Motorized (summer):** This includes the use of any motorized wheeled vehicle (including four-wheel drives, dirt bikes, and ATVs/OHVs) during the year when the ground is not covered by snow.
- **Motorized (winter):** This includes the use of snowmobiles and other motorized winter vehicles during the snow-covered months.
- **Non-Motorized (summer and winter)*:*** This includes hiking, horseback riding, cross-country skiing, and/or other means of non-motorized recreation. Non-motorized use does not include mountain biking because it is addressed as a separate activity below.
- **Mechanical Transport:** This includes any contrivance that moves people or material in or over land, water, or air that has moving parts, that provides a mechanical advantage to the user, and that is powered by a living or non-living power source. This includes, but is not limited to, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts.
- **Road Construction (permanent or temporary):** This includes the building of roads for a specified use or uses, either permanent or temporary.
- **Minerals - Leasable:** This includes oil and gas, coal, and other leasable minerals, including solid leasable minerals such as sodium, potassium, and others. All SJNF and TRFO lands made available for lease are subject to standard lease terms, which require operators of leases, as well as leasable mineral permits and licenses, to minimize adverse impacts to air, water, land, visual, cultural, and biological resources. Special lease stipulations are applied to a lease if additional restrictions on the rights of lessees are required to protect environmental resources. Special lease stipulations include NSO, CSU, and TL. Stipulations applied to new leases are described in Appendix H, Resource Management Stipulations for New Leases, of this LRMP.
- **Minerals - Locatable:** This includes minerals that are subject to claim under the Mining Law of 1872 that are open to entry for exploration and development (unless withdrawn by law). Unless lands have been withdrawn by law, development of locatable minerals is generally allowable on SJNF and TRFO lands; however, additional measures may be applied to plans and notices to prevent undue and unnecessary degradation in areas with concerns for specific resources or management designations.
- **Mineral - Salable:** This includes sand, gravel, and decorative rock for commercial or personal use, which may be disposed of through sales contract to individuals or for-profit enterprises, or through free use permits to government and non-profit entities.

Geographic Areas
San Juan National Forest and Tres Rios Field Office
Figure 3.1





Tres Rios
Dolores
Columbine
Pagosa
DOVE CREEK
SILVERTON
RICO
DOLORES
Canyons of the Ancients National Monument
CORTEZ
MANCOS
Mesa Verde National Park
TOWAOC
DURANGO
BAYFIELD
IGNACIO
PAGOSA SPRINGS
Chimney Rock National Monument

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MDR
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August 7, 2013

0 10 20 40 Miles

3.1 Tres Rios Field Office Geographic Area

The TRFO geographic area consists of 503,589 acres of BLM public land in southwest Colorado and is scattered across eight counties: Archuleta, Dolores, Hinsdale, La Plata, Montezuma, Montrose, San Juan, and San Miguel. Public lands in this geographic area are incredibly diverse and rich in natural and cultural resources, from the spectacular Rocky Mountain scenery of the Alpine Loop to the wealth of Ancestral Puebloan sites in the Four Corners area. There is also more than 300,000 acres of federal mineral estate underlying private lands (known as split estate) and mineral management on 800,000 acres of trust responsibility for tribal lands. Some of the BLM lands in the southern portion are adjacent to Mesa Verde National Park and to the Ute Mountain Ute Reservation and Southern Ute Reservation. Some of the BLM lands in the northwest portion border the Uncompahgre (Colorado), Moab (Utah), and Monticello (Utah) Field Offices of the BLM.

Recreation opportunities within the TRFO geographic area include whitewater rafting, canoeing, kayaking, hiking, mountain biking, horseback riding, fishing, hunting, motorcycle riding, photography, wildlife viewing, picnicking, skiing, snowmobiling, OHV use, or driving along one the many scenic routes. There are seven WSAs located in the TRFO geographic area. The Dolores River Canyon WSA is located approximately 17 miles west of Naturita, Colorado, and 28 miles north of Dove Creek. Elevations range from 5,000 to 5,300 feet. The dominant topographic feature of the WSA is the 30-mile-long, deeply cut, meandering canyon of the Dolores River. The canyon rim and adjacent mesas support pinyon-juniper woodlands with mixed desert shrubs on the slopes. The canyon bottoms support thick desert riparian vegetation, and scattered enclaves of cottonwood, ponderosa pine, aspen, and spruce-fir occur with the WSA. Desert bighorn sheep and river otter (*Lontra canadensis*) have been re-introduced to the WSA.

The McKenna Peak WSA (19,398 acres) is located in San Miguel and Dolores Counties approximately 45 miles northeast of Dove Creek. Elevations range from 6,300 to 8,600 feet. The major topographic feature of the WSA is McKenna Peak, which rises 1,000 vertical feet from Disappointment Valley. The WSA contains a wide variety of topographic features, including Mancos Shale badlands, Mesa Verde sandstone cliffs, canyons, mesas, and rolling hills. This wide variety of topography provides for a diverse vegetation complex within the WSA; barren areas, salt desert shrubs, pinyon-juniper woodlands, and Douglas-fir, oak brush and mountain mahogany can all be found within the WSA. The western third of the WSA is located within the Spring Creek Wild Horse Herd Management Area (HMA).

The Menefee Mountain WSA (7,089 acres) is located approximately 2 miles south of Mancos and 3 miles east of Mesa Verde National Park. Elevations range from 6,500 to 8,600 feet on Menefee Peak, with steep canyons radiating out from the 6-mile-long ridge of Menefee Mountain. Pinyon-juniper woodland is the dominant vegetation type at the lower elevations, with oak brush and pockets of ponderosa pine and spruce-fir at the higher elevations.

The Weber Mountain WSA (6,303 acres) is located just east of Mesa Verde National Park and is separated from the Menefee Mountain WSA by Weber Canyon. Elevations range from 6,600 to 8,200 feet with short, steep canyons radiating out from the 5-mile-long ridge of Weber Mountain. The WSA is characterized by pinyon-juniper woodland at the lower elevations, with oak brush and pockets of ponderosa pine and spruce-fir at the higher elevations.

The West Needles Contiguous (1,240 acres), Whitehead Gulch (1,669 acres), and Weminuche Contiguous (1,533 acres) WSAs are remnants of study areas, which were exchanged with the USFS in a boundary adjustment completed in 1983. The scenic landscapes provide hikers and horseback riders opportunity to explore scenic landscapes in solitude.

Located just north of Disappointment Creek, the 22,000-acre Spring Creek Basin HMA is open to a variety of multiple uses. The area is maintained to provide for a range of 35 to 65 adult horses, and excess horses are generally gathered when numbers exceed 65. According to local lore, the horses are descendants of those brought to the Disappointment Creek area in the late 1800s by a horse rancher from Montana. DNA and blood testing have indicated that Thoroughbred and Morgan are the primary breed influences in this herd. Travel in the area is restricted to designated roads. This is a remote area and none of the roads in the herd area are graveled.

Rangelands comprise about 85% of the public land in the TRFO geographic area. Currently, the TRFO manages 100 active allotments serving 81 grazing permits and providing around 24,000 animal unit months (AUMs) of forage for domestic cattle and sheep.

The historic mining town of Silverton is surrounded by BLM public lands. Silverton is situated high in the San Juan Mountains at an elevation of 9,305 feet. It is one of the main portals to the Alpine Loop Backcountry Byway (others being Ouray and Lake City).

Popular drives in the geographic area include the Alpine Loop Backcountry Byway and the San Juan Skyway, which swivel through the San Juan Mountains. The 65-mile Alpine Loop Backcountry Byway winds through wild, roughed, land scattered with old mining ruins, ghost towns, scenic alpine meadows, mountain streams, and forested mountains.

The area includes high densities of significant Puebloan archeological sites, as well as more modern mining, railroad, logging, and grazing historical sites. The Dolores River flows for more than 200 miles through southwest Colorado, starting high in the San Juan Mountains and descending to the Colorado River at the Colorado-Utah border. The Dolores flows through five major western life zones, from the alpine life zone, at its headwaters to the Upper Sonoran life zone along much of its lower reaches (6,400 to 5,000 feet in elevation). The Dolores River Canyon is one of the primary scenic attractions in the geographic area.

The northwest corner of the TRFO geographic area is mostly BLM public lands, including Dry Creek Basin and Big Gypsum Valley in the North Canyonlands Section. Continued cattle grazing and oil and gas development is expected in the Paradox Basin. Geology in portions of the area consists of sedimentary shale and sandstone formations, and is largely responsible for the area's water quality. Surface water quality is considered poor. It is high in salinity and sediment from surface runoff over highly erosive soils with high salinity content.

The Grandview Area, which is near Durango, is being annexed to the City of Durango (with substantial real estate and commercial development expected for this area during the life of this LRMP). Durango is interested in acquiring BLM lands in this area in order to provide better access to the new hospital and adjacent developments. Acquisition of some of the adjacent BLM lands under the Recreation and Public Purposes Act is under consideration. BLM-administered lands in the Grandview Area are currently managed under a Coordinated Resource Management Plan (BLM and City of Durango 2000), offering a co-emphasis on recreation (non-motorized trails), wildlife winter habitat, and sand and gravel production. A review and possible modification of the Grandview Coordinated Resource Management Plan is expected in the near future (which would address new management challenges anticipated from ongoing development adjacent to the BLM lands). BLM-administered lands in the Grandview Area currently provide an extensive trail network that is immediately adjacent to Durango (popular for hiking, horseback riding, and mountain biking). Substantial partnership-based wildlife habitat improvement projects have been carried out on the property. Recreation and mineral development are to be designed in a manner that maintains winter wildlife habitat effectiveness (including closure to public and recreation access during some winters). The land also contains a very significant prehistoric cultural landscape and is the last representative of Pueblo I occupation on public lands in the Durango area.

Desired Conditions

3.1.1 Public lands continue to function as "working lands." Collaborative forest health and rangeland management practices reduce wildfire hazards, contribute to the viability of private ranch lands, and sustain ecosystem services (including watershed health and wildlife habitat). Mining and mineral extraction would continue to occur, subject to market demand, and associated plans, permits, and licenses would be processed in a timely and efficient manner. The local economy benefits from, and contributes to, sustainable resource management, as well as to the preservation of open space.

3.1.2 The Dolores River system remains a primary water source in order to meet domestic and agricultural needs while, at the same time, contributing a wide array of recreational, ecological, and aesthetic services. Collaborative efforts support watershed health, instream water quality, scenic assets, healthy native and sport fish populations, rafting and flat water boating opportunities, and flow and spill management below McPhee Dam in support of ecological, recreational, reservoir management, and water rights imperatives.

3.1.3 A variety of looped single- and two-track opportunities for motorized and mechanized recreation exist at a range of elevations, offering different levels of difficulty. Motorized and mechanized opportunities are balanced with opportunities for foot and horseback access to areas of relative quiet and solitude at a variety of elevations. Much of the primary access to these areas is shared, based on mutual courtesy and on a strong stewardship ethic that is primarily self enforced and maintained by individuals and user groups.

3.1.4 Cultural and historic resources are protected, interpreted, and promoted through an integrated network involving the Anasazi Heritage Center, Canyons of the Ancients National Monument, the Ute Mountain Tribal Park, Mesa Verde National Park, and community visitor centers (including the Cortez Cultural Center, the Galloping Goose Museum, and the Mancos Visitor Center). Residents and visitors are educated and oriented in a manner that enhances and encourages their participation in the enjoyment and stewardship of cultural resources (which are significant contributors to the local economy).

3.1.5 Scenic vistas, especially along byways, are protected and enhanced through collaborative efforts with partners (e.g., Colorado Byways Commission, CPW, the Montezuma Land Conservancy, Colorado Department of Transportation [CDOT], and local governments).

3.1.6 Abundance and viability of Gunnison sage-grouse, and its habitat, are achieved through a range-wide perspective on species management that provides a healthy sagebrush steppe ecosystem so that the sage-grouse, and other sagebrush obligate species in the system, benefit. An atmosphere exists of cooperation, participation, and commitment among wildlife managers, landowners, private and public land managers, other stakeholders, and the interested public in the development and implementation of conservation actions that recognize the importance of sustainable local economies as being essential to successful conservation. Gunnison gage-grouse protection and restoration is enhanced through these cooperative efforts while, at the same time, oil and gas development, mining, recreation, and grazing continue.

3.1.7 Salinity and sediment contributions of the Dolores River tributaries (including Disappointment, Big Gypsum, Little Gypsum, and Dry Creeks) are reduced through an integrated activity approach that achieves reduced erosion and improves land health.

3.1.8 The unique soils of the gypsum lands in the Dolores area (including portions of Big Gypsum Valley, Little Gypsum Valley, and the Spring Creek area) are intact and have the soil productivity necessary in order to protect the rare biota associated with them.

3.1.9 The hanging gardens that provide the habitat for kachina fleabane (*Erigeron kachinensis*), Eastwood's monkeyflower (*Mimulus eastwoodiae*), and common maidenhair (*Adiantum capillus-veneris*) have the water sources and hydrologic systems necessary in order to support and sustain these rare plant species.

3.1.10 Ponderosa pine forests on the mesa tops display structural diversity (including more old growth stands, stands with a clumped structure, stands with large old trees, snags, and large dead and downed wood on the forest floor).

3.1.11 Large patches of sagebrush shrublands provide suitable habitat for the Gunnison sage-grouse and display a variety of structural conditions (including sagebrush patches with low and high cover and sagebrush patches with short and tall stems).They also display native herbs that are abundant and well distributed.

3.1.12 Narrowleaf cottonwood riparian areas and wetland ecosystem communities throughout the low and middle elevations of the geographic area display moderate to high canopy cover (greater than 20%) of narrowleaf cottonwood trees, including young-, middle-, and old-age classes.

3.1.13 Willow riparian areas and wetland ecosystem communities throughout the low and mid elevations of the Dolores geographic area display moderate to high canopy cover (greater than 20%) of willows, including young-, middle-, and old-age classes.

3.1.14 Aspen management maintains age and class diversity and promotes healthy stand conditions while, at the same time, continuing to supply a sustainable supply of aspen products to the local and regional industries.

3.1.15 Timber and fire management is used in order to restore stands to an uneven-age condition where natural fire regimes and natural processes can occur, and where a multi-aged and multi-cohort forest structure resilient to disturbance is established. Timber management in the ponderosa pine incorporates restoration forestry into commercial timber sales at an appropriate scale that provide support, stabilization, and diversification of the local industry.

See relevant sections in Chapter 3 for specific management direction for the following areas within the TRFO geographic area:

- BLM WSAs (McKenna Peak, Dolores River, Weber, Menefee, Handies Peak, West Needles, Whitehead Gulch, and Weminuche Contiguous)
- Recommended WSR segments
- ACECs (Gypsum Valley, Anasazi Culture Area)
- BLM SRMAs (Dolores River Canyon, Durango, Silverton, and Cortez) (see Section 2.14, Recreation)
- Lands managed for wilderness characteristics
- Wild horse HMAs (Spring Creek)
- Scenic, historic, and backcountry byways (portions of the San Juan Skyway and the Trail of the Ancients Scenic Byway)
- BLM wildlife management areas (Perins Peak)
- National recreation and scenic trails (Continental Divide National Scenic Trail, Old Spanish Historic Trail)
- Other areas with specific management (Dolores River Canyon, Mesa Verde Escarpment, Silverton area)

3.2 Dolores Ranger District Geographic Area (San Juan National Forest)

The Dolores Ranger District geographic area lies predominantly in Montezuma, Dolores, and San Miguel Counties, and consists of approximately 597,126 acres of NFS lands. The social center of this geographic area is the town of Cortez (with a population of approximately 8,500 people). Cortez is the Montezuma County seat, as well as the commercial center for the smaller communities of Mancos, Dolores, Rico, and Dove Creek (which is the Dolores County seat), all with populations of 1,200 or less.

The main river systems of this geographic area are the Mancos River (which has headwaters in the La Plata Mountains) and the Dolores River (which has headwaters in the Lizard Head wilderness). Both rivers provide irrigation for pastures, hay meadows, and other crops on private lands in the area. McPhee Reservoir, on the Dolores River, is the second largest body of water in Colorado. It is an important recreation area, as well as a source of domestic and irrigation water. Use of water from these rivers has greatly affected both historical settlement patterns and current land uses.

Significant portions of the San Juan Skyway traverse the Dolores geographic area (including U.S. Highway 145, from Lizard Head Pass down through Rico to Dolores and Cortez, and from there U.S. Highway 160 to the Montezuma-La Plata County line, which is the boundary with the Columbine geographic area). Other major segments of the skyway are to the east, in the Columbine geographic

area, and on the Uncompahgre National Forest to the north (going through Ouray, Ridgway, and Telluride). Since its designation as a scenic byway, the San Juan Skyway has been one of the most popular recreation attractions in southwest Colorado. It is one of only 26 All-American Roads in the United States. The skyway's diverse natural and cultural resources, combined with its unique and spectacular scenery, give it a claim as one of the crown jewels of scenic byways in the entire nation. Portions of the Trail of the Ancients Scenic Byway are also located within the Dolores geographic area.

The area includes high densities of significant Puebloan archeological sites (including the Anasazi Archeological District around McPhee Reservoir), as well as more modern mining, railroad, logging, and grazing historical sites.

The San Juan Mountains, which are part of the southern Rocky Mountains, fall into the South-Central Highlands Section. The San Juan Mountains are unusual within the north-south orientation of the Rocky Mountains, in that they are a large mountain range with an east-west orientation. This part of the geographic area includes the Lizard Head wilderness and several CRAs (including Storm Peak, Ryman, Black Hawk Mountain, and portions of San Miguel and Hermosa). This area has much less human development than the rest of the Dolores geographic area, with most of the development occurring on private land in the Dolores River valley (including the town of Rico). The area also contains some roads associated with historic, and current, timber harvesting and historic mining (especially near Rico). Big game hunting is popular in the fall. Aspen trees are an important component of the vegetation here, both for their scenic quality and to support the wood product plants in the area.

"The Pine Zone" is located on the west side of the geographic area and was heavily logged in the early 1900s. This area is still being logged; however, the emphasis is now on restoring more natural conditions. Cattle grazing occurs over most of the area. The area is also popular for big game hunting.

Desired Conditions

3.2.1 Public lands continue to function as "working lands." Collaborative forest health and rangeland management practices reduce wildfire hazards, contribute to the viability of private ranch lands, and sustain ecosystem services (including watershed health and wildlife habitat). The local economy benefits from, and contributes to, sustainable resource management, as well as the preservation of open space.

3.2.2 The Dolores River system remains a primary water source in order to meet domestic and agricultural needs while, at the same time, contributing a wide array of recreational, ecological, and aesthetic services. Collaborative efforts support watershed health, instream water quality, scenic assets, healthy native and sport fish populations, rafting and flat water boating opportunities, and flow and spill management below McPhee Dam in support of ecological, recreational, reservoir management, and water rights imperatives.

3.2.3 A variety of looped single- and two-track opportunities for motorized and mechanized recreation exist at a range of elevations, offering different levels of difficulty. Motorized and mechanized opportunities are balanced with opportunities for foot and horseback access to areas of relative quiet and solitude at a variety of elevations. Much of the primary access to these areas is shared, based on mutual courtesy and on a strong stewardship ethic that is primarily self-enforced and maintained by individuals and user groups.

3.2.4 Cultural and historic resources are protected, interpreted, and promoted through an integrated, interagency network involving the BLM's Anasazi Heritage Center and Canyons of the Ancients National Monument, the Ute Mountain Tribal Park, Mesa Verde National Park, and community visitor centers (including the Cortez Cultural Center, the Galloping Goose Museum, and the Mancos Visitor Center). Residents and visitors are educated and oriented in a manner that enhances and encourages their participation in the enjoyment and stewardship of cultural resources (which are significant contributors to the local economy).

3.2.5 Scenic vistas are protected and enhanced through collaborative efforts with partners (including the Colorado Byways Commission, CPW, the Montezuma Land Conservancy, the Office of Community Services, CDOT, Montezuma and Dolores Counties, and the Town of Rico).

3.2.6 The McPhee Reservoir area is one of the Four Corners' "recreation gems." A viable marina facility is re-established that offers, at a minimum, basic services for those enjoying water sports and fishing. A strong connection exists between the reservoir and the town of Dolores.

3.2.7 Ponderosa pine forests on the mesa tops of the Dolores geographic area display structural diversity (including more old growth stands, stands with a clumped structure, stands with large old trees, snags, and large dead and downed wood on the forest floor).

3.2.8 Narrowleaf cottonwood riparian areas and wetland ecosystem communities throughout the low and middle elevations of the Dolores geographic area display moderate to high canopy cover (greater than 20%) of narrowleaf cottonwood trees, including young-, middle-, and old-age classes.

3.2.9 Willow riparian areas and wetland ecosystem communities throughout the low- and mid-elevations of the Dolores geographic area display moderate to high canopy cover (greater than 20%) of willows, including young-, middle-, and old-age classes.

3.2.10 Aspen management maintains age and class diversity and promotes healthy stand conditions while, at the same time, continuing to supply a sustainable supply of aspen products to the local and regional industries.

3.2.11 Timber and fire management is used in order to restore stands to an uneven-age condition where natural fire regimes and natural processes can occur, and where a multi-aged and multi-cohort forest structure resilient to disturbance is established. Timber management in the ponderosa pine incorporates restoration forestry into commercial timber sales at an appropriate scale that provide support, stabilization, and diversification of the local industry.

See relevant sections in Chapter 3 for specific management direction for the following areas within the Dolores geographic area:

- Wilderness (Lizard Head wilderness area)
- USFS recommended wilderness areas (portions of the Lizard Head and Hermosa CRAs)
- RNAs (Narraguinnep and Grizzly Peak)
- Scenic, historic, and backcountry byways (portions of the San Juan Skyway and the Trail of the Ancients Scenic Byway)
- National recreation and scenic trails (Calico and Highline trails)
- Special Areas (Rico and McPhee)

Management Area Composition: Table 3.2.1 shows the distribution of MAs within the Dolores geographic area.

Table 3.2.1: Management Area Distribution in the Dolores Geographic Area

Management Area	Proposed Plan (Preferred Alternative) (acres)	Percentage of Geographic Area (USFS lands)
MA 1: natural processes dominate	34,427	5.8%
MA 2: special areas and designations	34,645	5.8%
MA 3: natural landscapes, with limited management	209,620	35.1%
MA 4: high-use recreation emphasis	28,053	4.7%
MA 5: active management (commodity production in order to meet multiple-use goals)	289,779	48.5%
MA 7: public and private lands intermix	0	0.0%
MA 8: highly developed areas	602	0.1%
Total	**597,126**	**100%**

3.3 Columbine Ranger District Geographic Area (San Juan National Forest)

The Columbine geographic area forms the central part of the planning area. It is situated primarily in La Plata and San Juan Counties, with some lands in Hinsdale and Archuleta Counties, and consists of approximately 691,150 acres of NFS lands. The Columbine geographic area shares a northern border with the Uncompahgre and Rio Grande National Forests, and with the BLM TRFO, Uncompahgre, and Gunnison Field Offices.

The social center of this geographic area is the city of Durango (with a population of approximately 16,000 people). It is the county seat for La Plata County (with a population of approximately 47,000 people). It is also the commercial center for the smaller communities of Bayfield (approximately 1,800 people), Ignacio (approximately 775 people), and Silverton (approximately 600 people; which is the San Juan County seat). Farmington, Aztec, and Bloomfield (New Mexico) have ties to the area as trade centers, support for the oil and gas industry, and recreation users (especially of La Plata Canyon).

Durango Mountain Resort (DMR) lies between Silverton and Durango, off of U.S. Highway 550. DMR has a base area on private land, with some additional base facilities and ski runs permitted on the SJNF. La Plata and San Juan Counties have approved a Planned Unit Development for the private lands adjacent to the DMR, with the potential for over 2,000 resort housing and lodging units supported by substantial commercial development. The likely increase in population adjacent to public lands will result in a need for close coordination on issues (including trail development, fuels reduction, and wildlife habitat).

Significant portions of San Juan Skyway traverse the Columbine geographic area (including as U.S. Highway 550 from Durango north to Silverton, and over Red Mountain Pass, which is the boundary with the Uncompahgre National Forest). A lower elevation portion of the skyway follows U.S. Highway 160 from Mancos Hill to Durango. The other towns in the Columbine geographic area are situated at lower elevations (and have milder climates). Durango is situated at the intersection of U.S. Highway 550 (which connects with Silverton to the north, and Aztec and Farmington, New Mexico, to the south) and U.S. Highway 160 (which connects with Cortez to the west and Pagosa Springs to the east). The city is a hub for the area. Durango is one of the more mature tourism towns in Colorado, with a historic downtown. It is supported by tourism related to the Durango-Silverton Narrow Gauge Railroad, the Animas River, DMR, Mesa Verde National Park, and the Weminuche wilderness area. Durango is one of a handful of towns that can make a good claim to the title “mountain bike capital of the world.” Durango is also home to Fort Lewis College. It is the governmental, commercial, and entertainment center for southwest Colorado. Residents of Durango have easy access to public lands within the planning area. Bayfield has been a bedroom community to Durango, but is developing a significant business infrastructure of its own, which is expected to grow in the coming years.

The main river systems in the Columbine geographic area are the Animas (with headwaters above Silverton) and the Los Pinos, or Pine (with headwaters in the Weminuche wilderness). Both rivers drain into the San Juan River in northern New Mexico, which then joins the Colorado River. Water diversion for agriculture and municipal use is important on both rivers. Both river systems also contain relatively pristine stretches that are valued for their scenery and recreational opportunities.

Vallecito Reservoir is in this geographic area; it is the most developed lakeshore resort and recreation area in southwest Colorado. Above Vallecito Reservoir, and nearby Lemon Reservoir, are access points to the Weminuche wilderness. The Los Pinos River flows south from Bayfield through the town of Ignacio, which is a tri-ethnic community that serves as the headquarters of the Southern Ute Tribe. The Southern Ute Tribe has combined decades of revenues from energy production with excellent management in order to become one of the wealthiest tribes in the country.

The higher country, part of the San Juan Mountains, is characterized by steep, rugged terrain with predominantly spruce-fir, aspen, and mixed conifer forests. Much of the area to the east of U.S. Highway 550 and the Animas River is in either the Weminuche wilderness or in the Piedra Area (designated in the 1993 Colorado Wilderness Act to be managed to preserve its wilderness character). CRAs include Baldy, Florida River, Runlett Park, and smaller areas adjacent to the Weminuche wilderness area and the Piedra Area.

The Missionary Ridge Fire in 2002 burned approximately 73,000 acres in the area north of Durango (east of U.S. Highway 550), over to the western edge of the Piedra Area (east of Vallecito Reservoir). Early rehabilitation efforts have gone well; however, restoration would continue to be a concern during the life of the LRMP. Continued cooperation with local communities (including Vallecito) that were greatly affected by the fire and its aftermath will continue to be a management goal.

Much of the high country west of U.S. Highway 550 is unroaded, including the Hermosa area (which is the largest roadless area outside designated wilderness in Colorado, consisting of approximately 148,139 acres). The Hermosa Trail, which parallels the main stem of Hermosa Creek, is considered one of the top mountain bike rides in the country. The portion of the Hermosa Creek west of the trail is managed as a MA 1, with much it recommended for inclusion in the National Wilderness Preservation System. The eastern portion, including the trail, is managed as MA 3. Although this portion includes several popular motorcycle routes, non-motorized recreation is emphasized for most of the Hermosa area. The San Miguel area is another large roadless area (a significant portion of which is to be managed as a MA 1, including Engineer Mountain).

This area is characterized by low- to mid-elevation mountains, mesas, hills, and valleys with mild to moderate winters and predominantly mixed confer, ponderosa pine, pinyon-juniper, and mountain grassland vegetation. Coalbed methane reserves exist in large quantities in the northern San Juan Basin area. Most of this area was leased for oil and gas development prior to the development of this LRMP with additional development authorized by the Northern San Juan Basin Coalbed Methane EIS (BLM and USFS 2006) and ROD in 2007 (USFS and BLM 2007). Direction for the area, consistent with that ROD, is found in Section 3.25 of this LRMP.

The vast amount of undeveloped land that provides a setting for backcountry recreation is a primary reason people visit this area. Additionally, the area contains some unique access into high-elevation remote areas (including the Durango-Silverton Narrow Gauge Railroad's access to Weminuche wilderness trailheads, and historic mining roads into the high-elevation mountains around Silverton and in La Plata Canyon). Compared to the other geographic areas, the Columbine geographic area has the most trailheads providing access into the backcountry. Given local population, visitors, tourism amenities, access to the backcountry, and the proximity of other regional destinations, the Columbine geographic area experiences the greatest amount of recreation users and resulting recreation management challenges.

The economies of the communities in the Columbine geographic area have evolved towards an increasing emphasis on amenity migration (the movement of people for pleasure rather than for economic reasons), recreation tourism, and resort development, but still have ties to multiple-use management. The historic connections of La Plata County to ranching, hunting, and public land grazing are of continuing importance, as the area struggles to protect the scenic, wildlife, and cultural aspects that ranching and outfitting/guiding play in the overall appeal of the area. Although the historic ties to sawmilling have substantially diminished, the Missionary Ridge Fire was a reminder of the continued need for forest management and the economies that help support forest management on public and private lands. The fact that La Plata County is one of the top energy-producing counties in Colorado also presents multiple-use management challenges.

Desired Conditions

3.3.1 The full spectrum of outdoor recreational opportunities, ranging from wilderness settings to in-town access, is provided. This is the result of a collaborative process for the allocation and sharing of uses and stewardship responsibilities designed to protect the quality of the human experience and health of the natural environment.

3.3.2 Extensive heritage resources remain central to the area's economy, culture, and recreational experience. Heritage resources, as well as the natural settings that make these resources so unique, are protected and sustainable.

3.3.3 Destination and resort development, especially along the river corridors, is planned, developed, and managed in order to minimize its impact on the health of surrounding landscapes, natural resources, and communities. This is the result of sustained cooperation from the land management agencies, interested citizens, state and local agencies, and developers.

3.3.4 Oil and gas development is planned, conducted, and reclaimed to a standard commensurate with the ecological, aesthetic, and human values attached to the land where the extraction is occurring.

3.3.5 Opportunities for research, particularly applied research, are fully developed with local partners (including Fort Lewis College, the Mountain Studies Institute, and the Center for Snow and Avalanche Research, as well as other interested groups and institutions).

3.3.6 Winter sports conflicts are reduced through cooperative efforts between motorized and non-motorized advocates. Some areas may emphasize one use over another, but many potential problems are resolved through agreements on locations of parking areas, grooming, and route locations. High-quality opportunities are available for both snowmobiling and backcountry skiing.

3.3.7 The wetlands and fens associated with the upper Pine River and Flint Creek watersheds in the Columbine geographic area (where a high density of fens occur) are protected and have the water sources and hydrologic systems necessary in order to support and sustain these ecosystems.

3.3.8 The wetlands and fens associated with the Lime Creek watershed and the Mountain View Crest and Molas Lake areas in the Columbine geographic area (where high concentrations of wetlands and potential fens occur) have the water sources and hydrologic systems necessary in order to support and sustain these ecosystems.

3.3.9 The Missionary Ridge wildfire area in the Columbine geographic area displays less bare soil and erosion, and a higher abundance and distribution of native herbaceous plant species.

3.3.10 The landscapes associated with the intensive gas development in the Columbine geographic area display minimal fragmentation. The major vegetation types associated with those lands, particularly the ponderosa pine forests, pinyon-juniper woodlands, and mountain shrublands, display compositions and structures similar to those that occurred before the development.

See relevant sections in Chapter 3 for specific management direction for the following areas within the Columbine geographic area:

- Wilderness (Weminuche wilderness)
- USFS recommended wilderness areas (a portion of the Hermosa CRA and the Elk Park portion of the Weminuche Adjacent CRA)
- Recommended WSR segments (Hermosa Creek and tributaries, Los Pinos and tributaries, above Vallecito Reservoir)
- RNAs (Electra and Hermosa)
- Botanical areas (Chattanooga Iron Fen)
- Archeological areas (Falls Creek)
- Scenic, historic, and backcountry byways (portions of the San Juan Skyway)
- National recreation and scenic trails (portions of the Continental Divide National Scenic Trail and the Colorado Trail)
- Special Areas (HD Mountains)

Management Area Composition: Table 3.3.1 shows the distribution of MAs within the Columbine geographic area.

Table 3.3.1: Management Area Distribution in the Columbine Geographic Area

Management Area	Proposed Plan (Preferred Alternative) (acres)	Percentage of Geographic Area (USFS lands)
MA 1: natural processes dominate	312,018	45.5%
MA 2: special areas and designations	48,239	7.0%
MA 3: natural landscapes, with limited management	216,800	31.6%
MA 4: high-use recreation emphasis	33,196	4.8%
MA 5: active management (commodity production in order to meet multiple-use goals)	61,512	9.0%
MA 7: public and private lands intermix	8,650	1.3%
MA 8: highly developed areas	5,632	0.8%
Total	**686,047**	**100%**

3.4 Pagosa Ranger District Geographic Area (San Juan National Forest)

The Pagosa geographic area is the easternmost geographic area in the planning area. It is bounded by the Continental Divide (the boundary with the Rio Grande National Forest) on the north and the east. It is predominantly situated in Archuleta, Hinsdale, and Mineral Counties, with some lands in Rio Grande and Conejos Counties. The Pagosa Ranger District consists of approximately 585,770 acres of NFS lands.

The social center of the geographic area is the town of Pagosa Springs (with a population of approximately 1,620 people). Although Pagosa Springs is the only incorporated town in the geographic area, much of the population of Archuleta County (with a population of approximately 10,000 people) is in low-density residential and second-home enclaves, most notably in the Pagosa Lakes area. The geographic area includes significant acres of Hinsdale and Mineral Counties, but the towns, as well as almost all of the population of those counties, are situated north of the Continental Divide and the Weminuche wilderness area (with little social connection and limited road access to the residents and businesses in the Pagosa geographic area).

Pagosa Springs sits at the intersection of U.S. Highway 160 (before the road turns north to head over Wolf Creek Pass) and U.S. Highway 84 (which heads south into northern New Mexico). Pagosa Springs was historically a compact sawmill and ranching town, with a Hispanic and pioneer Anglo ranching and sawmilling culture supported by productive forest land and livestock grazing. The area has long-standing ties with people coming out of Texas and New Mexico in the summer (to where it is cool and green) and from around the county in the fall (many to hunt big game). Besides the pleasant climate, the area is known for outstanding scenery. Many winter visitors to Wolf Creek Ski Area, as well as backcountry skiers and snowmobilers, stay in Pagosa Springs (rather than in South Fork, which is on the other side of Wolf Creek Pass).

On a percentage basis, Archuleta County is the fastest growing county in southwest Colorado. Amenity migration and second-home development began in the 1970s (with the development in the Pagosa Lakes area west of Pagosa Springs) and now fills most of the triangle of developable land between U.S. Highway 160, the Piedra Road, and the forest boundary east of Martinez Creek. Similar development has pushed against the USFS boundary to the west of Pagosa Springs and north of U.S. Highway 160. Much of the NFS lands around Pagosa Springs are in MA 7 settings (public and private lands intermix), which reflects this development. In addition to fire risk reduction in these areas, development of trails and recreation opportunities and the protection of wildlife habitat (especially winter range) are important.

The main river systems in this geographic area are the Piedra River (which has headwaters in the Weminuche wilderness area) and the San Juan River (with the headwaters of the West Fork of the San Juan beginning north of Pagosa Springs in the Weminuche wilderness area, and the East Fork of the San

Juan beginning northeast of Pagosa Springs in the South San Juan wilderness area). These rivers, and their tributaries, are important for recreation and scenic quality, as well as for irrigation and domestic water supplies. They also support a diverse mix of aquatic habitats and riparian and wetland ecosystems that contribute to the ecologic and economic values of the area.

Approximately 85% of the public lands in the Pagosa geographic area are in the South-Central Highlands Section (including portions of the Weminuche wilderness area, the South San Juan wilderness area, and the Piedra Area). The Treasure Mountain and Turkey Creek CRAs (which lie between the Weminuche and the South San Juan wilderness areas) contain important linkages and corridors for wildlife movement. Other IRAs include Graham Peak and areas adjacent to the Weminuche and South San Juan wilderness areas and the Piedra Area. These areas are managed, for the most part, in order to preserve their undeveloped character.

At middle and lower elevations in this geographic area, there is an extensive network of roads, primarily left by historical logging. These roads support many forms of dispersed recreational use and camping, and are heavily used during hunting season. Restoration-oriented logging is expected in the ponderosa pine and mixed conifer forest found in this area. This area receives more precipitation than most of the Southwest and has good growing conditions for timber. Large trees, including aspen, are common.

Having moderate climates, the lower elevation mountains, mesas, and valleys are dominated by mountain grasslands, and mixed conifer, ponderosa pine, and pinyon-juniper woodlands, where human settlement has evolved. Much of the human development in the Pagosa geographic area is at the interface with forest lands, presenting wildfire hazard mitigation challenges that are being actively addressed through county policy, community wildfire protection planning, and mitigation.

A related challenge is the network of access roads connecting U.S. Highway 160 and U.S. Highway 84 to the SJNF. These roads provide access to residential subdivisions and other private in-holdings. They also provide recreation access to public lands for local visitors, as well as for visitors from out of the area. The pressure on these roads presents maintenance demands and costs that must be worked out collaboratively among local, state, and other federal agencies; property owners; and public land users. Growth in the Pagosa geographic area has reached a point where more domestic water and water storage are needed in order to meet increasing demand. This requires continued cooperation, in terms of exploring alternatives that involve storage and/or diversion facilities located on federal lands (where protecting the ecological integrity of affected stream channels is mandated).

The Pagosa geographic area's most striking heritage resource is the Chimney Rock National Monument. The user-supported interpretive tours, special events, and visitor center at this unique pre-Puebloan site are conducted and staffed by a very active group of volunteer citizens.

Desired Conditions

3.4.1 Management activities maintain or enhance the ecological sustainability and integrity of the area. The demands of residents and users are balanced with the protection of watersheds, wildlife habitat, vegetation, soil productivity, and undisturbed natural areas.

3.4.2 The Pagosa geographic area is a destination for hunters, hikers, and motor vehicle enthusiasts. It promotes partnerships and responsible stewardship in all recreational uses of the public lands.

3.4.3 The local economy is supported and diversified by agency activities and programs (including maintaining roads, facilities, and campgrounds; supporting stewardship and partnerships; and providing a wide spectrum of recreation and tourism opportunities).

3.4.4 The USFS recognizes the needs of the area's growing population of residents and visitors. SJNF facilities (including roads, bridges, campgrounds, and trailheads) are designed and maintained to the proper standards for safe and efficient access to public lands.

3.4.5 The SJNF actively cooperates with local governments, residents, and land users in order to maintain and enhance the safety and enjoyment of the public lands. This is accomplished through the protection of scenery, the mitigation of WUI fire danger, and land ownership adjustments.

3.4.6 White fir is less abundant in the warm-dry and cool-moist mixed conifer forests of the Pagosa geographic area. The rare bristlecone pine forests that only occur in the Pagosa geographic area are protected and sustainable.

Please see relevant sections in Chapter 3 for specific management direction for the following areas within the Pagosa geographic area:

- Wilderness (Weminuche and South San Juan)
- Other Congressional designations (Piedra Area)
- USFS recommended wilderness areas (portions of the Turkey Creek, Monk Rock, and Weminuche Adjacent CRAs)
- Recommended WSR segments (the Piedra River, from U.S. Highway 160 to the Forks; East Fork of the Piedra, north of the wilderness boundary; Middle Fork of the Piedra; and West and East Fork of the San Juan River)
- Chimney Rock National Monument
- RNAs (Williams Creek, Martinez Creek, Hidden Mesas, Navajo River, Piedra, Porpyry Gulch)
- Botanical areas (O'Neal Hill, site of the globally rare Pagosa Springs bladderpod [*Lesquerella pruinosa*]).
- National recreation and scenic trails (portions of the Continental Divide National Scenic Trail).

Management Area Composition: Table 3.4.1 shows the distribution of MAs within the Pagosa geographic area.

Table 3.4.1: Management Area Distribution in the Pagosa Geographic Area

Management Area	Proposed Plan (Preferred Alternative) (acres)	Percentage of Geographic Area (USFS lands)
MA 1: natural processes dominate	252,073	43.3%
MA 2: special areas and designations	9,104	1.6%
MA 3: natural landscapes, with limited management	169,699	29.2%
MA 4: high-use recreation emphasis	8,615	1.5%
MA 5: active management (commodity production in order to meet multiple-use goals)	100,439	17.3%
MA 7: public and private lands intermix	40,909	7.0%
MA 8: highly developed areas	821	0.1%
Total	**581,660**	**100%**

3.5 Management Areas (San Juan National Forest)

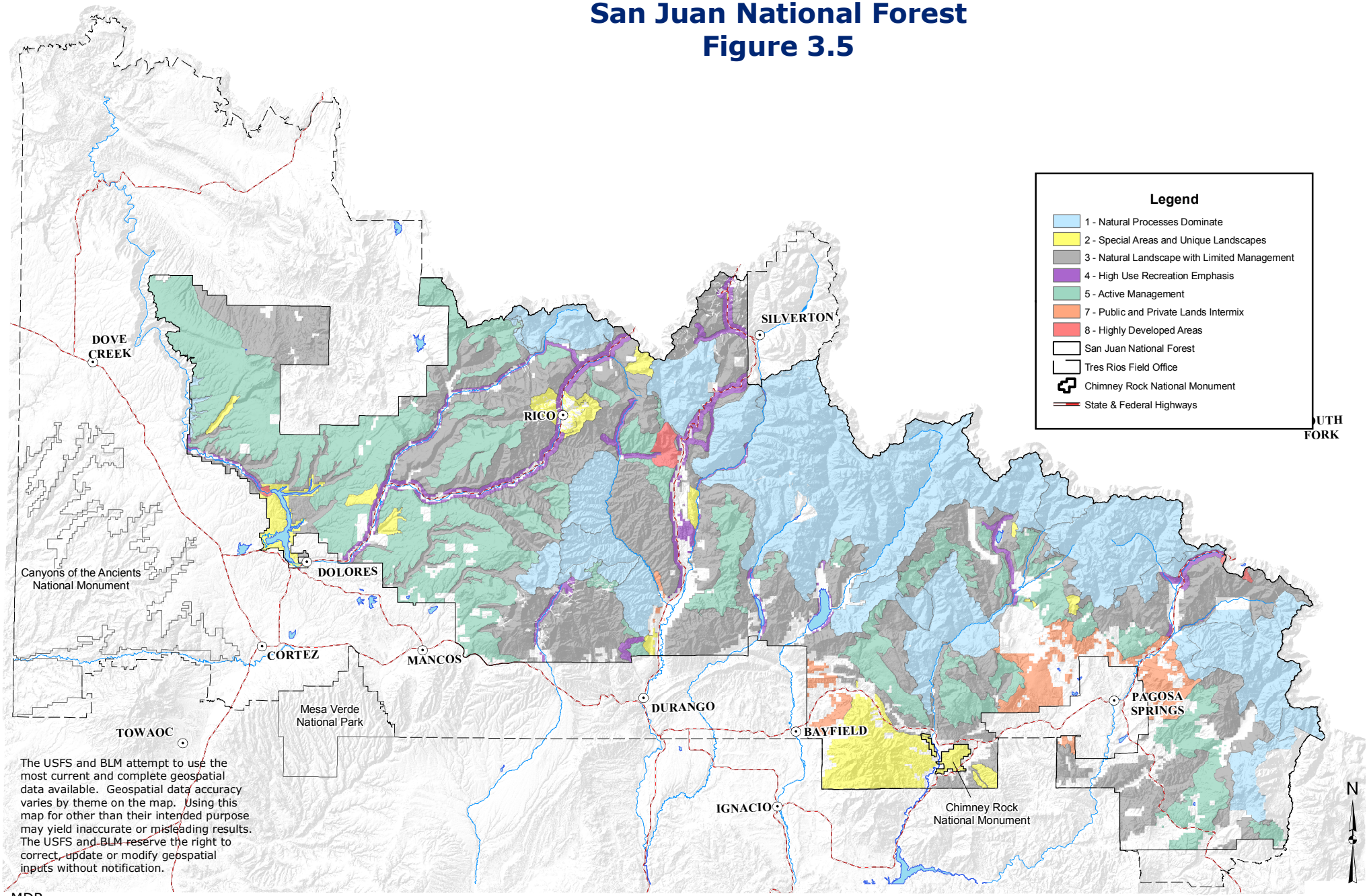
MA designations apply to all SJNF lands within the planning area, but not to TRFO lands. MAs describe the intensity of management that can be expected within each MA, ranging from areas where natural processes dominate and shape the landscape to areas that are intensely managed. In addition to the level of management, MAs also provide a general sense of how the landscape will appear and identify uses and activities that are allowed. To varying degrees, multiple uses occur within all the MAs. The allowable use tables for each MA portray the suitability determinations made under the grazing, timber, and travel programs in Chapter 2 as they apply to each MA, and also identify additional uses that are listed as allowable, restricted, or prohibited (if there are discrepancies between allowable use tables and grazing, timber, or travel suitability maps, the suitability map takes precedence). Table 3.5.1 identifies the distribution of MAs across the SJNF (see also Figure 3.5).

Table 3.5.1 Management Area Allocations on San Juan National Forest Lands

Management Area	Acres	Percent of SJNF
MA 1 Natural Processes Dominate	598,517	32.1%
MA 2 Special Areas and Designations	91,985	4.9%
MA 3 Natural Landscapes, with Limited Management	596,119	32.0%
MA 4 High-Use Recreation Emphasis	69,864	3.7%
MA 5 Active Management (commodity production in order to meet multiple-use goals)	451,730	24.2%
MA 7 Public and Private Lands Intermix	49,560	2.7%
MA 8 Highly Developed Areas	7,056	0.4%
Total	**1,864,831**	**100%**

Some exceptions may apply to activities, particularly those activities that are pursuant to reserved or outstanding rights, or as provided by statute or treaty. Additionally, there are 566,100 acres of CRAs on the SJNF. CRAs are governed by the Colorado Roadless Rule and may have additional restrictions beyond the general suitability identified by MAs. When guidance in a forest plan is more restrictive than direction described in the Colorado Roadless Rule, actions must be consistent with the more restrictive direction.

Management Areas
San Juan National Forest
Figure 3.5



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
May 30, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

Management Area 1 (MA 1): Natural Processes Dominate

These relatively pristine lands are places where natural ecological processes operate free from human influences. Succession, fire, insects, disease, floods, and other natural processes and disturbance events shape the composition, structure, and landscape patterns of the vegetation. These areas contribute significantly to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors, reference areas, primitive recreation opportunities, and places for people seeking natural scenery and solitude. Roads and human structures are absent and management activities are limited on MA 1 lands. Motorized travel, and in most cases, motorized equipment are prohibited. MA 1 areas include designated wilderness areas, the Piedra Area, WSAs, and other lands where a primary desired condition is to maintain the undeveloped natural character of the landscape. See Table 3.5.2 for a list of allowable, restricted, and prohibited uses within MA 1.

Table 3.5.2: Management Area 1 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Allowable
Prescribed burning	Allowable
Mechanical fuels treatment	Restricted (allowable when meeting desired conditions of the area)
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Prohibited
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Prohibited
Livestock grazing	Allowable
Facilities	Prohibited
Motorized (summer)	Prohibited
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Allowable
Mechanical transport	Restricted (mountain bikes are allowable in MA 1 landscapes outside designated wilderness)
Road construction (permanent or temporary)	Prohibited
Minerals - leasable (oil and gas, and other)	Restricted (designated wilderness, WSAs, and the Piedra Area are withdrawn from mineral leasing; a NSO stipulation would be applied to CRAs outside designated wilderness)
Minerals - locatable	Prohibited (wilderness areas are withdrawn from locatable mineral entry, subject to valid and existing rights; other MA 1 areas are open to mineral entry, but impacts to natural resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

Management Area 2 (MA 2): Special Areas and Designations

These areas possess one or more special feature or characteristic that makes them, and their management, unique from other areas within the planning area. MA 2 areas include RNAs, archeological areas, habitat areas, botanical areas, and other unique areas that have a mix of special features and uses. In general, MA 2 areas are managed in order to protect or enhance their unique characteristics; therefore, management intensity and suitability varies by each area. See subsequent sections in Chapter 3 of this LRMP for specific management direction for these MA 2 areas.

Management Area 3 (MA 3): Natural Landscapes with Limited Management

MA 3 lands are relatively unaltered places where natural ecological processes operate primarily free from human influences. Succession, fire, insects, disease, floods, and other natural processes and disturbance events predominantly shape the composition, structure, and landscape patterns of the vegetation. These areas contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors, reference areas, primitive and semi-primitive recreation opportunities, and places for people seeking natural scenery and solitude.

On the SJNF, approximately 47% of the MA 3 lands are within CRAs. Management activities are allowed in MA 3 areas but are more limited in the CRAs. For MA 3 lands that are not CRAs, roads, infrastructure, and management activities are more common. Management activities include habitat and ecosystem restoration, livestock grazing, wildland fire and prescribed burning, hazardous fuels reduction, salvage logging following fire, insect epidemics and/or wind events, and invasive species treatments. Motorized equipment may be used, and temporary road construction is allowed; however, most roads would be closed upon project completion. Most MA 3 areas emphasize non-motorized recreation opportunities, but motorized travel occurs in some areas on existing roads and motorized trails. Most MA 3 lands are available for fluid mineral leasing with specific resource stipulations; however, surface occupancy and road construction is prohibited (i.e., NSO stipulation) in CRAs. See Table 3.5.3 for a list of allowable, restricted, and prohibited uses within MA 3.

Table 3.5.3: Management Area 3 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Allowable
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Restricted (development may be conditioned or prohibited in CRAs and lands managed for wilderness characteristics)
Livestock grazing	Allowable
Facilities	Restricted (development may be prohibited in CRAs and lands managed for wilderness characteristics)
Motorized (summer)	Restricted (motorized travel may occur in some MA 3 locations on designated routes)
Motorized (winter)	Restricted (oversnow motorized travel may occur in some MA 3 locations)
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Restricted (temporary road construction may occur in some MA 3 locations in order to achieve resource desired conditions; exceptions may apply for valid existing rights; additional road construction would also be allowed subject to valid existing rights and terms of development authorization)
Minerals - leasable (oil and gas, and other)	Restricted (special lease stipulations [i.e., NSO, CSU, TL] may apply to specific resources within MA 3 areas)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Restricted (limited road access and other constraints in MA 3 landscapes may limit or preclude mineral collection.)

Management Area 4 (MA 4): High-Use Recreation Emphasis

These areas are places with relatively high levels of recreation use that is managed in order to provide a wide variety of opportunities and experiences to a broad spectrum of visitors. They are associated with, and often provide, access to popular destinations, transportation corridors, scenic byways, scenic vistas, lakes, and streams. Developed recreation facilities that provide user comfort and resource protection are present.

These areas tend to be altered by human activities, but also include some more undeveloped places (including backcountry travel corridors). Visitors can expect to see a wide range of human activities and development (including roads, trails, interpretive sites, campgrounds, trailheads, fences, and day-use facilities). Both motorized and non-motorized activity is common. Natural ecological processes and disturbance agents (including succession and fire) are often influenced by humans on most of these lands. Resource uses (including livestock grazing, timber management, and wildlife management) may occur in conjunction with surrounding recreation and scenic objectives. Mineral development, mining, and alternative energy infrastructure is generally not compatible within MA 4 areas, e.g., in developed recreation sites or along scenic corridors. See Table 3.5.4 for a list of allowable, restricted, and prohibited uses within MA 4.

Table 3.5.4: Management Area 4 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Restricted (may be used in order to meet desired conditions on adjacent lands)
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Restricted (restrictions may apply within developed recreation areas)
Land use ROWs, special use permits, and utility corridors	Allowable
Livestock grazing	Restricted (restrictions may apply within developed recreation areas)
Facilities	Allowable
Motorized (summer)	Allowable
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Allowable
Minerals - leasable (oil and gas, and other)	Restricted (special lease stipulations [i.e., NSO, CSU, TL] may apply to specific resources within MA 4 areas)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Restricted (generally not compatible within developed recreation areas or scenic corridors)

Management Area 5 (MA 5): Active Management

These multiple-use areas are places where active management occurs in order to meet a variety of social, economic, and ecological objectives. They are easily accessible, occurring mostly on roaded landscapes and relatively gentle terrain. These are lands where timber harvesting, oil and gas activities, and intensive livestock grazing occur and influence the composition, structure, and landscape patterns of the vegetation. Natural ecological processes and disturbance agents (including succession and fire) are often influenced by humans on many of these lands. A mosaic of vegetation conditions is often present, some showing the effects (impacts) of past management activities, others appearing predominantly natural. These areas contribute to ecosystem and species diversity and serve as habitat for fauna and flora.

In MA 5 areas, visitors can expect to see a wide range of human activities, development, and management investments (including roads, trails, fences, corrals, stock ponds, timber harvesting equipment, oil and gas wells, and livestock). Maintenance of past and current investments is anticipated to be continued for future management opportunities. Motorized and non-motorized recreation opportunities are easily accessed by the relatively dense network of roads found on these lands. Hiking trails provide access for visitors (who can expect contact with others). Developed recreation facilities that provide user comfort and resource protection are present. See Table 3.5.5 for a list of allowable, restricted, and prohibited uses within MA 5.

Table 3.5.5: Management Area 5 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Allowable
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Allowable
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Allowable
Livestock grazing	Allowable
Facilities	Allowable
Motorized (summer)	Allowable
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Allowable
Minerals - leasable (oil and gas, and other)	Allowable (special lease stipulations [i.e., NSO, CSU, TL)] may apply to specific resources within MA 5 areas)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Allowable

Management Area 7 (MA 7): Public and Private Lands Intermix

These areas are places where the public lands within the planning area are in close proximity to private lands; therefore, coordination with communities and local governments is essential in order to balance the needs of both parties. MA 7 areas are often associated with towns and cities, as well as with the houses, structures, people, and values associated with them. Visitors can expect to see a wide range of human activities and development (including roads, trails, fences, signs). In some MA 7 areas, oil and gas development is evident.

The proximity of these areas to private lands makes them a priority for fuels and vegetation treatments in order to reduce wildfire hazards. The backyard or rural recreation setting provided by many of these lands is an amenity to the active lifestyles and quality of life for local residents. Hiking, biking, and dog-walking are common activities. These areas contribute to ecosystem and species diversity, and serve as habitat for fauna and flora. Winter range for deer and elk is a common component of MA 7 areas, as are seasonal closures in order to reduce animal disturbance. Natural ecological processes and disturbance agents (including succession and fire) are influenced by humans on most of these lands.

Land exchanges, acquisitions, and disposals can be undertaken in order to improve the intermingled land ownership patterns that are common in MA 7 areas. Cooperation with adjacent landowners and local governments is common in order to improve access and convey roads to county jurisdictions, where appropriate. Cooperation is also be important in order to improve the transportation network, enhance protect resources, and allow authorized legitimate access to public lands. Utility and communication distribution lines tend to be more common in these areas. See Table 3.5.6 for a list of allowable, restricted, and prohibited uses within MA 7.

Table 3.5.6: Management Area 7 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Prohibited
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Allowable
Livestock grazing	Allowable
Facilities	Allowable
Motorized (summer)	Allowable
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Allowable
Minerals - leasable (oil and gas, and other)	Allowable (special lease stipulations [i.e., NSO, CSU, TL] may apply to specific resources within MA 7 areas)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Allowable (depending on location and resources present, resource restrictions may apply as identified in the LRMP standards and guidelines)

Management Area 8 (MA 8): Highly Developed Areas

These lands are places that have been altered with long-term development (including downhill ski areas and large dams). In these areas, human activities have created lasting changes in the composition, structure, and function (ecological processes and disturbance agents) of the associated ecosystems. These areas, which often provide large socioeconomic benefits, include DMR and the McPhee Dam. Mineral development, mining, and alternative energy infrastructure is generally not compatible within MA 8 areas, e.g., within downhill ski areas and dams. See Table 3.5.7 for a list of allowable, restricted, and prohibited uses within MA 8.

Table 3.5.7: Management Area 8 Allowable Uses

Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Prohibited
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Restricted
Land use ROWs, special use permits, and utility corridors	Allowable
Livestock grazing	Restricted
Facilities	Allowable
Motorized (summer)	Allowable
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Allowable
Minerals - leasable (oil and gas, and other)	Restricted (stipulated with NSO to protect facilities)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, MA 8 areas contain a provision for assessing the affected area for future mineral withdrawal and/or segregation)
Minerals - saleable (materials)	Restricted (depending on location and resources present, restrictions may apply as identified in the LRMP standards and guidelines)

3.6 Wilderness Areas and Wilderness Study Areas

Wilderness is a unique and vital resource. In addition to offering primitive recreation opportunities, it is valuable for its scientific and educational uses, as a benchmark for ecological studies, and for the preservation of historical and natural features.

The Wilderness Act of 1964 defines wilderness as:

> A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Federal agencies manage wilderness resources in a manner that ensures that their character and values are dominant and enduring. Wilderness management must be adapted over time in order to ensure their present and future availability and enjoyment as wilderness. Wilderness is managed in order to ensure that human influence does not impede the free play of natural forces or interfere with natural succession in the ecosystems, and to ensure that wilderness areas offer outstanding opportunities for solitude and/or for a primitive and unconfined type of recreation. Wilderness is also managed as one resource rather than a series of separate resources (FSM 2320.6).

There are three wilderness areas on USFS-administered lands, as well as the Piedra Area (USFS), which is a Congressionally designated area managed to preserve its wilderness characteristics (see Figure 3.6). Wilderness areas are managed by USFS policy outlined in FSM 2320. Specifically, the wilderness areas and the Piedra Area are managed under the San Juan-Rio Grande National Forests Wilderness Management Direction (USFS 1998a) that is incorporated by reference as part of this LRMP.

There are eight WSAs on BLM-administered lands within the planning area (see Figure 3.6). These WSAs are areas that were found to have wilderness characteristics during the original wilderness inventory that was conducted from 1978 to 1980 as directed by Section 603 of the FLPMA. This inventory focused on roadless areas of public lands of 5,000 acres or more, areas of less than 5,000 acres that had wilderness characteristics in association with contiguous roadless lands managed by another agency, and areas of less than 5,000 acres that had wilderness characteristics and could practicably be managed to keep those characteristics in an unimpaired condition. Other sections within the FLPMA provide additional authority to designate WSAs; however, all WSAs within the TRFO's jurisdiction were designated through the authority found in Section 603.

Section 603 also provides direction to the BLM on the management of WSAs and states, "During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness." This language is referred to as the "non-impairment" mandate.

BLM WSAs were designated in the 1980s, and a final agency recommendation was forwarded to the President in 1991. Unless released by Congress from wilderness review, WSAs would continue to be managed in accordance with BLM Manual 6330 (July 13, 2012). If the WSAs are released, they would be managed in accordance with the direction provided in the desired conditions below. See Table 3.6.1 for a listing of the existing wilderness areas, the Piedra Area, and WSAs.

Table 3.6.1: Wilderness Areas and Wilderness Study Areas

Area Name and Type	Acres
Wilderness Areas	
Weminuche	328,270
South San Juan	71,593
Lizard Head	20,658
Total	**420,521**
Piedra Area	**60,400**
Wilderness Study Areas	
Weber Mountain	6,300
Dolores River Canyon	16,781
Handies Peak	1,041
Menefee Mountain	7,303
McKenna Peak	20,902
West Needles Contiguous	960
Whitehead Gulch	1,870
Weminuche Contiguous	1,419
Total	**56,576**

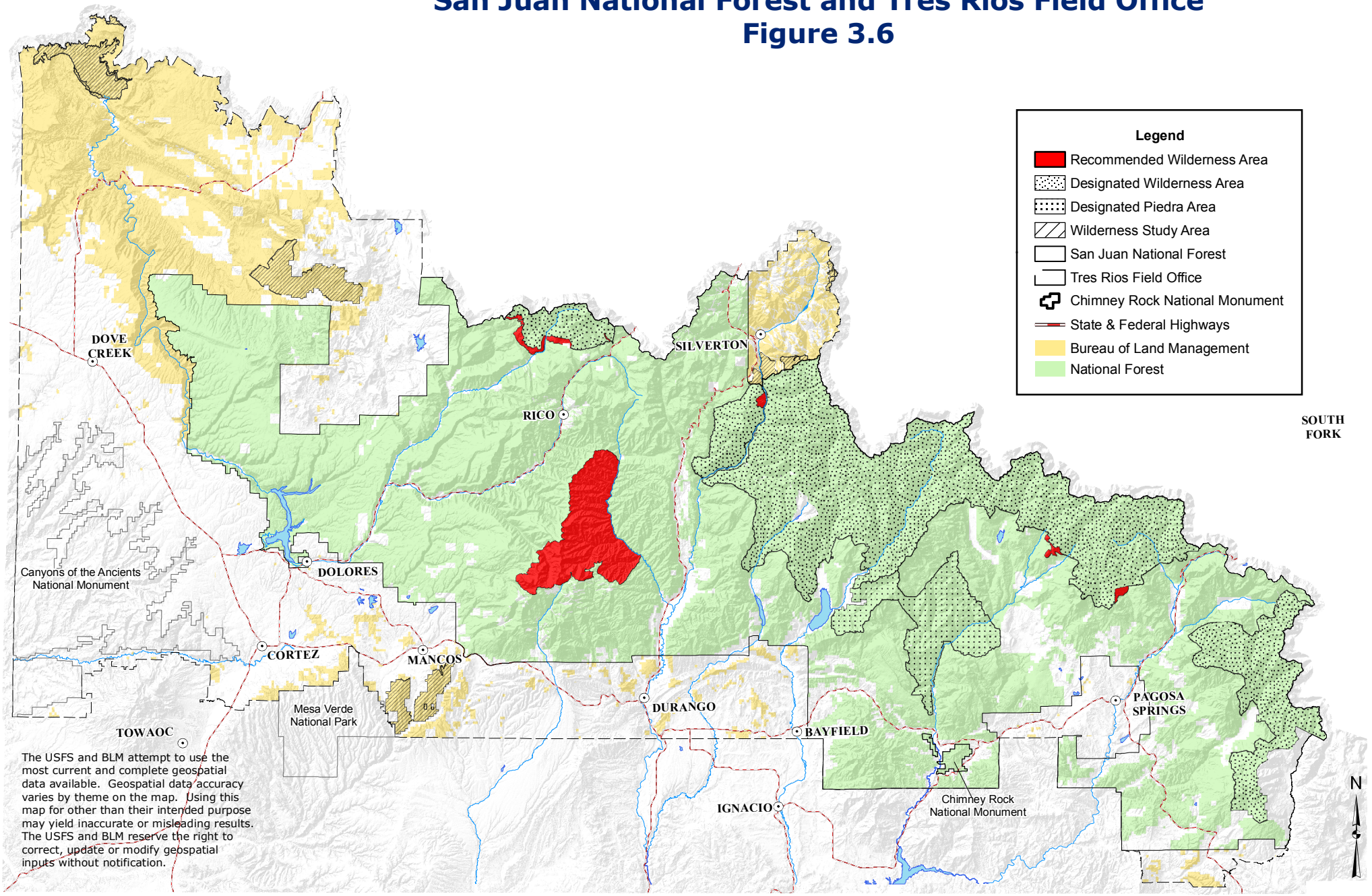
Desired Conditions

3.6.1 WSAs released by Congress from wilderness review would be managed for existing values and uses, such as primitive and unconfined recreation, opportunities for solitude, naturalness, roadlessness, livestock grazing, forest resources, and biodiversity. The visual quality of WSAs released from wilderness review would be managed under the VRM class of adjacent BLM public lands. Where more than one VRM class lies adjacent to a WSA, an interdisciplinary team would decide the VRM class of the released WSA.

Recommended Wilderness

San Juan National Forest and Tres Rios Field Office

Figure 3.6



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

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May 30, 2013

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Land and Resource Management Plan

3.7 Recommended Wilderness Areas (San Juan National Forest)

Using criteria from USFS directives, the SJNF used its inventory of roadless lands as part of the process for revising the LRMP to identify lands exhibiting "roadless character." These areas were further examined to determine whether they possess wilderness characteristics using criteria from the Wilderness Act and FSH 1909.12. With regard to size, these areas must contain 5,000 or more acres, or they can contain less than 5,000 acres, but must be contiguous to existing wilderness areas or areas that are recommended for wilderness under other federal ownerships.

Twenty-one areas (totaling approximately 555,815 acres) are included in the SJNF inventory as having "roadless character." These areas were analyzed for their potential inclusion in the National Wilderness Preservation System (see Appendix C). The SJNF recommends the following areas for inclusion in the National Wilderness Preservation System (see Figure 3.6):

- portions of the Hermosa CRA (50,850 acres);
- portions of the Lizard Head CRA (2,632 acres);
- portions of the Weminuche Adjacent CRA (specifically, Elk Park and Monk Rock, totaling 740 acres); and
- portions of the Turkey Creek CRA (664 acres).

These areas will be managed to maintain their wilderness characteristics until Congress designates them as wilderness or releases them for other multiple-use management (in which case, they would be managed under MA 1).

3.8 Lands Managed for Wilderness Characteristics (Tres Rios Field Office)

In addition to the initial wilderness review required by Section 603 of the FLMPA that led to the creation of WSAs, the Secretary of the Interior is also required to "maintain on a continuing basis an inventory of all public lands and their resource and other values," which encompasses wilderness characteristics as a resource (FLPMA, Section 201).

In July 2011 the BLM Director reaffirmed this responsibility via BLM IM No. 2011-154 (BLM 2011h), which directed field units to review and update their inventory of lands for their wilderness characteristics and established a uniform protocol for doing so. The same IM emphasized that such an inventory "shall not, of itself, change or prevent change of the management or use of the lands." Rather, the findings of the wilderness characteristics inventory are to be considered among all other resource values and potential resource uses during the land use planning process.

Per the guidance found in IM 2011-154 (which became policy as BLM Manual 6310 in July 2012), an inventory was conducted to determine the presence or absence of wilderness characteristics throughout the TRFO. Where these characteristics were found, discrete units were identified as "lands with wilderness characteristics." Lands with wilderness characteristics can generally be defined as unroaded BLM public land areas greater than 5,000 acres in size that have maintained their primitive character and are primarily undeveloped. The wilderness characteristics inventory process further includes unroaded areas of any size adjacent to lands currently managed to protect wilderness characteristics, including those lands managed by other agencies. IM No. 2011-154 (BLM 2011h) also establishes a protocol for defining "roads" for the purposes of this inventory.

The FEIS alternatives analyze various strategies for managing these areas, and the BLM is not required to manage them in a particular manner as long as inventories are current and impacts to wilderness characteristics are analyzed and considered among the various other resources present in each unit. A detailed discussion of the wilderness characteristics inventory and evaluation process, and its results, is found in Appendix O. The EIS analysis, which takes into consideration the management of multiple resources, also guides the decision process for which lands with wilderness characteristics will be

managed for protection. Figure 3.8 identifies the lands that will be managed for wilderness characteristics, and Table 3.8.1 provides the acreage and a description of the location of the units that will be managed for wilderness characteristics.

Table 3.8.1: BLM Lands Managed for Wilderness Characteristics

Unit Number	General Location	Acres
CO-030-301b	Snaggletooth area of Dolores River	10,723
CO-030-290h	Coyote Wash	1,144
Total acres		**11,867**

Desired Conditions

3.8.1 Wilderness characteristics are present and preserved within the lands described in Table 3.8.1 and identified on Figure 3.8.

Standards

3.8.2 Lands described in Table 3.8.1 and identified on Figure 3.8 must be managed in accordance with the following management actions and allowable uses:

3.8.2a Lands managed for wilderness characteristics are not available for location of new rights-of-way under any conditions (they are identified as exclusion areas). Modification of existing authorizations that would add new disturbance outside the boundary of the existing right-of-way is prohibited; adjustments to existing rights-of ways or other authorizations may be allowed if impacts to wilderness characteristics are reduced or eliminated.

3.8.2b Lands managed for wilderness characteristics are closed to new road construction.

3.8.2c Lands managed for wilderness characteristics are closed to motorized and mechanized travel (summer and winter), with the exception of access related to valid existing rights.

3.8.2d Lands managed for wilderness characteristics are closed to mineral materials sales.

3.8.2e Extractive commercial uses are prohibited.

3.8.2f Personal product removal permits are restricted to uses that that preserve or enhance wilderness characteristics.

3.8.2g Lands managed for wilderness characteristics are managed under VRM Class II.

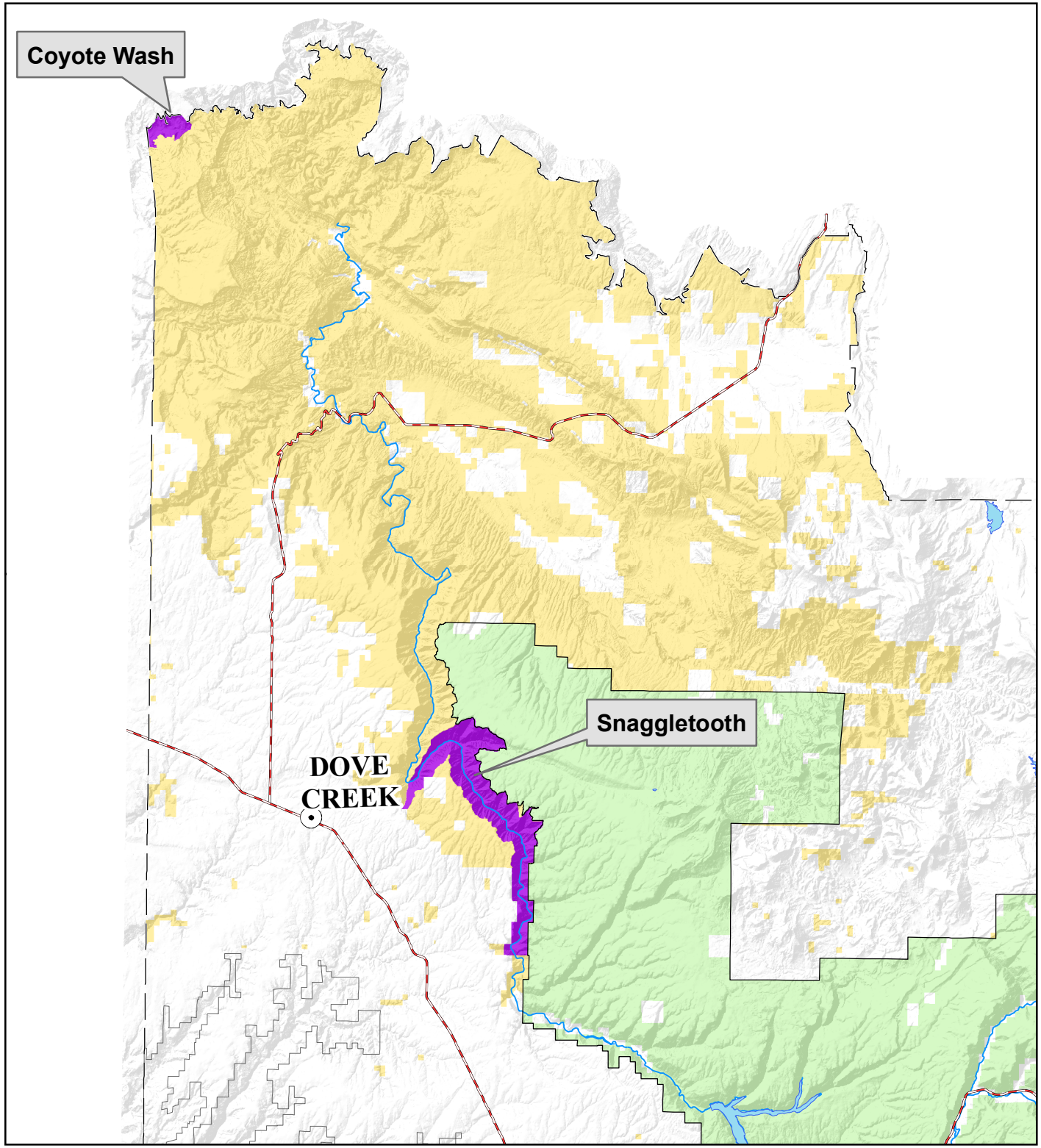
3.8.2h Construction of new structures and facilities is restricted to activities that preserve or enhance wilderness characteristics or those necessary for the management of other uses allowed under this LRMP.

3.8.2i Lands managed for wilderness characteristics must be retained in federal ownership.

Lands Managed for Wilderness Characteristics

Tres Rios Field Office

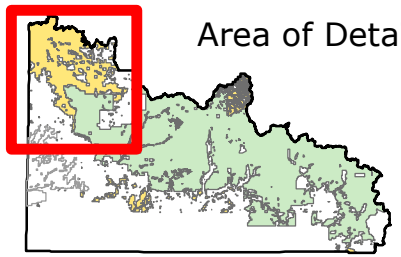
Figure 3.8



Legend

- Lands Managed for Wilderness Characteristics
- San Juan National Forest
- Tres Rios Field Office
- Chimney Rock National Monument
- State & Federal Highways
- Bureau of Land Management
- National Forest

0 3.5 7 14 Miles



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NAD 83, Polyconic Projection
July 2, 2013

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3.9 Wild and Scenic Rivers

Introduction

Congress enacted the Wild and Scenic Rivers Act (WSRA) in 1968 in order to preserve the free-flowing condition, water quality, and outstandingly remarkable values (ORVs) of select rivers. The WSRA directs that each river in the National Wild and Scenic Rivers System be administered in a manner that protects and enhances its outstanding natural and cultural values. The WSRA allows existing uses of a river to continue and future uses to be considered (as long as the use does not conflict with the protection of river values).

WSRA Section 5(d)(1) directs federal agencies to consider the potential of all rivers and streams for inclusion in the National Wild and Scenic Rivers System during their planning processes. All streams and rivers within the planning area were assessed as to their WSR eligibility and suitability. The FEIS describes the process used for the planning area (also see Appendix D for additional details).

In order to be found suitable for WSR status, rivers must meet the following criteria:

- they must be free-flowing (not in a reservoir and having mostly natural banks);
- they must have at least one ORV (ORVs can be in relation to fish, wildlife, recreation, scenery, ecology, cultural, historic, and/or other resource);
- their free-flowing character, water quality, and ORVs should be protected, even if there are other competing uses; and
- their WSR status would be the best method for protecting their ORVs.

During the planning process, the SJNF and TRFO determined the appropriate development level of rivers within the planning area. This was based on water resources development, shoreline development, and accessibility. These constitute a river's classification as "wild," "scenic," or "recreation." Table 3.9.1 lists the rivers that have been found to be suitable for WSR status (see also Figure 3.9).

These rivers may eventually be designated as part of the National Wild and Scenic River System by the Secretary of the Interior or as the result of an Act of Congress (Secretarial designation requires that the state governor make application to the Secretary of the Interior). The identification of rivers as suitable through this land management planning process does not trigger any water rights or other protections under the WSRA. In order to manage the rivers for their potential inclusion into the National Wild and Scenic River System, existing authorities will be used to protect the identified river's free-flowing character, water quality, ORVs, and recommended classification (details of the interim protective management are listed in FSM 1990.12_80 and BLM Manual 6400). Previous land management plans had similar direction and have provided protection for the ORVs of the Los Pinos River, the Piedra River, and the Dolores and West Dolores Rivers over the past several decades.

Table 3.9.1: Miles of River Segments Suitable for Wild and Scenic River Status by Class

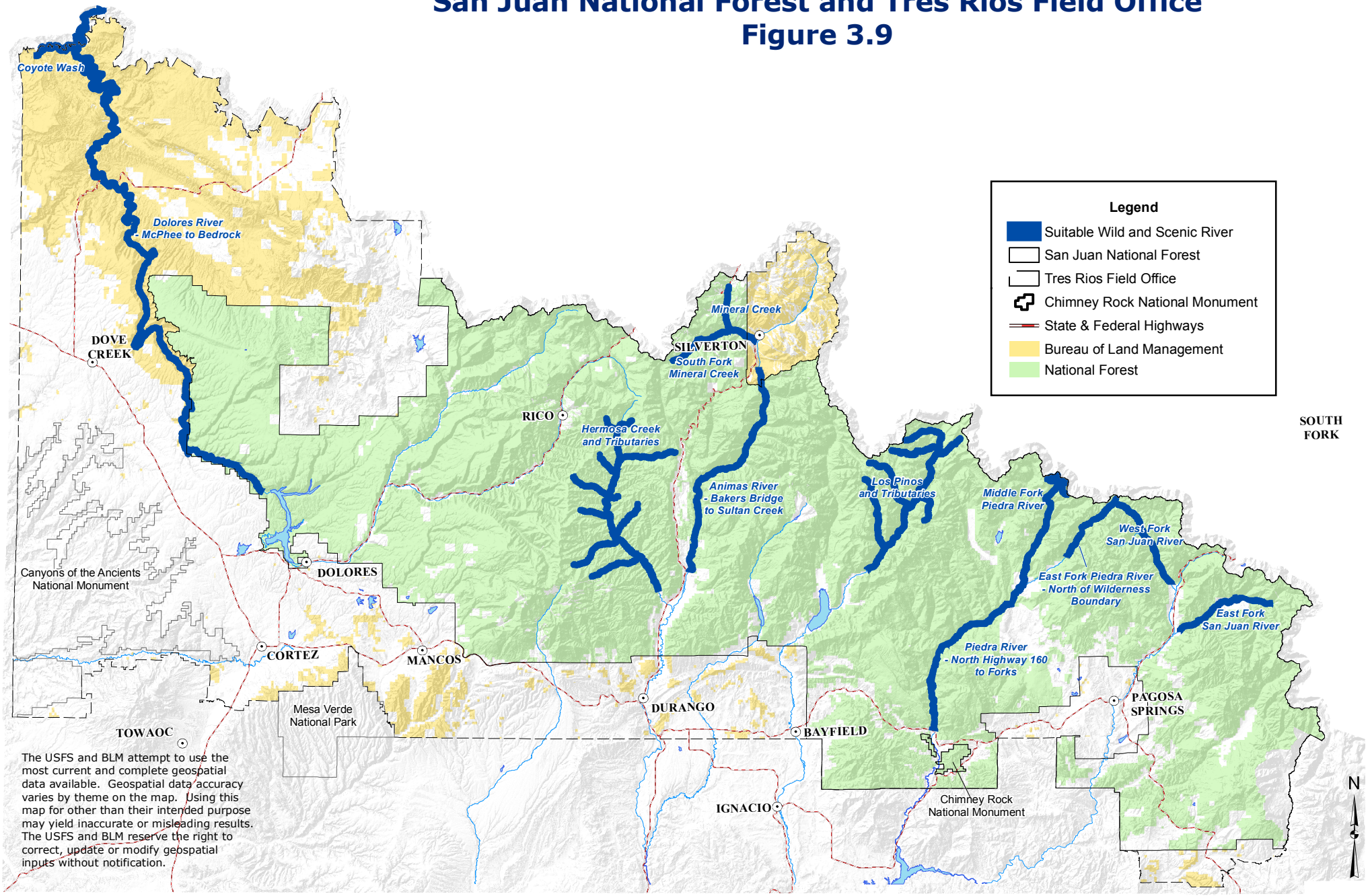
River Segment	Agency	Wild	Scenic	Recreation	Total
Dolores River - McPhee To Bedrock	BLM	48.33	23.10	36.89	108.32
Coyote Wash	BLM	7.60			7.60
Dolores Totals		**55.93**	**23.10**	**36.89**	**115.92**
Animas River - Bakers Bridge to Sultan Creek	FS			27.19	27.19
Mineral Creek	FS			8.65	8.65
South Fork Mineral Creek	FS			7.41	7.41
Animas River Totals				**43.25**	**43.25**

River Segment	Agency	Wild	Scenic	Recreation	Total
Big Bend Creek	FS	4.43			4.43
Big Lick Creek	FS	0.76			0.76
Clear Creek	FS		5.36		5.36
Corral Creek	FS	1.65			1.65
Deer Creek	FS	2.72			2.72
East Fork Hermosa Creek	FS			6.70	6.70
Elk Creek	FS	4.25			4.25
Hermosa Creek	FS		28.08		28.08
South Fork Hermosa Creek	FS	5.89			5.89
West Cross Creek	FS	2.44			2.44
Hermosa Creek Totals		**22.14**	**33.44**	**6.70**	**62.28**
Los Pinos, above Vallecito Reservoir	FS	21.77			21.77
Lake Creek	FS	8.05			8.05
Flint Creek	FS	7.03			7.03
Sierra Vandera Creek	FS	3.67			3.67
Snowslide Gulch	FS	3.51			3.51
Rincon la Osa	FS	5.69			5.69
Rincon la Vaca	FS	4.33			4.33
Los Pinos Totals		**54.05**	**0.00**	**0.00**	**54.05**
Piedra River N of Hwy 160	FS	14.09	0	7.98	22.06
East Fork Piedra River in Wilderness	FS	9.26	0	0	9.26
Middle Fork Piedra River	FS	11.64	0	7.66	19.30
Piedra River Totals		**34.99**	**0**	**15.64**	**50.63**
West Fork San Juan River	FS	8.50		2.70	10.7
East Fork San Juan River	FS			12.66	12.66
San Juan River Totals		**8.48**		**15.44**	**23.88**

Suitable Wild and Scenic Rivers

San Juan National Forest and Tres Rios Field Office

Figure 3.9



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
August 20, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
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3.10 Scenic, Historic, and Backcountry Byways

Introduction

Currently, driving for pleasure is one of the most popular forms of recreation within the planning area, with scenic byways and backcountry byways serving as some of the most popular routes. As the population increases, and as "Baby Boomers" grow older and become less able to engage in more physically active forms of recreation, larger numbers of visitors are anticipated to take up driving for pleasure. Heritage tourism, which is among the fastest growing segments of the tourism industry, is often combined with a scenic drive.

Consistent with the primary goals of the National Scenic Byway Program, SJNF and TRFO managers will guide the appropriate physical development of these travel corridors and their associated facilities, direct the conservation of unique and valued attributes surrounding the planning area, and provide leadership for byway management that supports efforts to benefit these routes.

The planning area is home to the 232-mile-long San Juan Skyway, which was designated by the USFS as a National Scenic Byway in 1988 (also designated as a State Scenic and Historic Byway and as an All-American Road in 1997). The San Juan Skyway traverses some of the most spectacular, rugged, and pristine landscapes in America. The area is rich in culture—from prehistoric habitations to the colorful mining era that marked the San Juan Mountains in the 1800s (including the development of the narrow-gauge railways throughout the area).

The 65-mile-long Alpine Loop National Backcountry Byway passes through the southern San Juan Mountains (often along routes that follow ancient paths of Native Americans as they returned to their traditional summer hunting camps). This rugged route connects the towns of Lake City, Silverton, and Ouray. Spectacular high-elevation scenery and numerous historical markers explain the mining history of the area as the route travels through the towering San Juan Mountains.

The Trail of the Ancients Scenic Byway highlights the long and intriguing inhabitation of the Four Corners region by Native Americans. It takes visitors to remote archeologically, culturally, and historically significant sites in Colorado, Utah, and Arizona. The section of the byway within the planning area travels mainly within the Canyons of the Ancients National Monument (BLM), Hovenweep National Monument (National Park Service), Ute Mountain Ute tribal lands, and communities (including Cortez and Dolores). In total, 114 miles of this scenic byway are within Colorado.

The byway program provides some safety, information, and sanitary services; protects, conserves, and interprets valued resources; and promotes a quality image of the SJNF and TRFO. Planning and infrastructure for these popular driving routes is not keeping up with the increasing demand for recreation. Inventorying scenic conditions along the three byways, as well as developing or updating corridor management plans and interpretive strategies, will help identify management priorities and actions designed to enhance the visitor experience. Travel management planning will integrate effectively with the management of these byways.

SJNF and TRFO managers will participate in partnerships with local communities, businesses, governmental agencies, nonprofit organizations and other interested groups and individuals to manage, develop, preserve and interpret these nationally significant routes, which have become destinations unto themselves. Potential projects should promote stewardship and ultimately provide benefits to local economies.

Desired Conditions

3.10.1 The byways are the main access routes, or gateways, to a wide array of recreation opportunities within the planning area; they have appropriate public information and services.

3.10.2 Important cultural, historic and agricultural heritage sites along these three byways (including early historic mining, ranching, and Native American sites) are interpreted.

3.10.3 Scenic byways and adjacent landscapes provide high-quality scenery. Viewsheds along scenic byways are protected, and scenic integrity is maintained in order to meet the public's desire for attractive natural landscapes. The byways contribute to recreation tourism and the regional economy. The byways are managed in order to protect the intrinsic qualities for which they were designated, consistent with current corridor management plans.

3.10.4 Each byway corridor management plan (the community-based strategy to balance the conservation of the byway corridors' intrinsic qualities with the use and enjoyment of those same resources) is up-to-date, having been developed with participation from a variety of stakeholders interested in preserving and enhancing the scenic, natural, historic, cultural, archeological and recreational resource qualities of the byway.

3.10.5 Byway goals and objectives for the effectively integrated with the applicable agency recreation facility master plan.

3.10.6 Byway goals and objectives are considered when actions are taken that could impact the byway.

3.10.7 Significant historic structures along these three byways are preserved and stabilized.

Additional Guidance

- San Juan Skyway Corridor Management Plan (Friends of the San Juan Skyway Association 1995)
- Trail of the Ancients Corridor Management Plan (Mesa Verde County 2001)
- Alpine Triangle Recreation Management Plan (BLM 2010c)

3.11 National Recreation and Scenic Trails and National Historic Trails

Introduction

National recreation and scenic trails are federally recognized trails that connect people to local resources and improve their quality of life. More than 900 trails have been designated throughout the nation. There are two designated national recreation and scenic trails within the planning area: the Calico National Recreation Trail and the Continental Divide National Scenic Trail. A master plan for the Colorado Trail was signed in 1998 and all three trails are recognized through establishment reports and management plans for their scenic, historic, interpretive, and recreation values.

The Old Spanish National Historic Trail also crosses through the planning area. Authorized by Congress in December 2002, the Old Spanish National Historic Trail commemorates the first overland link from Santa Fe to California. While the Old Spanish Trail is currently mapped as crossing the planning area, very few localities associated with the trail have actually been identified and ground-truthed.

Trail stewardship is emphasized through partnerships, marketing and interpretation, monitoring efforts, and maintaining and enhancing desired conditions.

The key to sustaining a successful network of national recreation and scenic trails, and national historic trails, is to continue to engage partners (including the Continental Divide National Scenic Trail Alliance and the Colorado Trail Foundation) and effective trail stewardship (including reconstruction, relocation, monitoring, volunteer recruitment and training, signage, and production of educational materials). Regular reviews of the partnership agreements between the SJNF or TRFO and partners will help ensure clear role definition for the management and operation of these trails. Coordination with adjoining USFS- and BLM-administered lands that also contain the Continental National Divide Scenic Trail and the Colorado Trail is also an important element of successful trail management and interpretation.

Marketing emphasis includes ensuring that all trailheads and trails have essential safety, orientation, and regulatory signs that are consistent with the natural setting of the trail. Marketing efforts also include the dissemination of accurate information regarding these trails to the public in an effective manner through a variety of media and venues (including the SJNF and TRFO websites, guidebooks, brochures, and visitor centers).

Desired Conditions

3.11.1 Consistent with their designation, the significant scenic, historic, recreation and natural resources for each trail are identified, interpreted, and protected. The values for which these trails were established are retained.

3.11.2 The Continental Divide National Scenic Trail and the Colorado Trail provide opportunities for remote backcountry recreation, challenge, and solitude, except where they come near area communities (where more people and development may be encountered).

3.11.3 The Continental Divide National Scenic Trail and the Colorado Trail are non-motorized trails and have high scenic integrity.

3.11.4 Interpretive venues are used to inform and educate visitors about the national recreation and scenic trails, as well as about resource stewardship.

3.11.5 Trail segments near area communities and/or major access points are planned and designed in order to be barrier-free.

3.11.6 Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.

3.11.7 Interpretive displays, visitor contacts, and brochures are available to help visitors and employees understand and appreciate the heritage and cultural resources associated with the SJNF and TRFO. A wide range of heritage activities, experiences, and products (both on-site and off-site) are available for visitor enjoyment and education. Off-site activities include museum displays, brochures, audio programs, classroom presentations, and field trips. Public access and interpretive efforts are compatible with the physical, cultural, and recreational settings and values of the resources.

Objectives

3.11.8 Over the life of the LRMP, partner with the Old Spanish Trail Association to ground truth the location of at least two segments of the Old Spanish National Historic Trail.

3.11.9 Over the life of the LRMP, develop at least one interpretive product in partnership with the Old Spanish Trail Association that interprets the Old Spanish National Historic Trail within the planning area.

3.11.10 Over the life of the LRMP, inventory high potential historic sites and trail routes of the Old Spanish Trail, develop a national trail management corridor, and establish goals and objectives for national trails in accordance with BLM Manuals 6250 and 6280 (BLM 2012c, 2012d).

Guidelines

3.11.11 Other resource activities should be designed in order to meet scenic quality objectives for these special designation trails (generally, a foreground and middle-ground of very high to high scenic integrity or VRM Class II).

3.11.12 **Old Spanish National Historic Trail:** A literature search and/or Class III cultural resources survey should be conducted within 0.5 mile of either side of the centerline of the congressionally designated Old Spanish National Historic Trail in high potential segments, prior to authorization of ground-disturbing activities or activities that could substantially interfere with the nature and purposes of the trail.

Additional Guidance

- Continental Divide National Scenic Trail Comprehensive Plan (USFS 2009c)
- USFS Decision Notice, Colorado Trail Management Direction and Route Selection EA, Region 2 (USFS 1998b)
- USFS Master Plan for the Colorado Trail (USFS 1998c)
- FSM 2300, Chapter 2353, National Scenic and Historic Trails (USFS 2009d)
- BLM Manual 6250, National Scenic and Historic Trail Administration (BLM 2012c)
- BLM Manual 6280, Management of National Scenic and Historic Trails, and Trails and Trails under Study or Recommended as Suitable for Congressional Designation (BLM 2012d)
- Public Law 90-543, National Trails System Act of 1968, as amended 2002, (this amendment created the Old Spanish National Historic Trail
- Old Spanish Trail National Historic Trail Feasibility Study and Environmental Assessment (National Park Service 2001)
- Calico Trail Establishment Report (USFS 1979)

3.12 Research Natural Areas (San Juan National Forest)

RNAs are national forest lands designated in perpetuity for non-manipulative research and education, and for the preservation of biodiversity. They are part of a long-term national network of ecological reserves managed to allow natural ecological processes to proceed with minimum human intervention. RNAs represent relatively natural, unaltered ecosystems that serve as reference areas to assess the consequences of management actions on similar lands.

Desired conditions and objectives in the LRMP apply to RNAs in general. Specific desired conditions and objectives for individual RNAs established through the revised LRMP will be developed when the management plans for individual RNAs are developed. Table 3.12.1 lists existing RNAs and those that are established through this LRMP, as well as key features of each area. Figure 3.12 displays the location of the RNAs.

Table 3.12.1: Existing and New Research Natural Areas on San Juan National Forest Lands

NA	Key Features
Narraguinnep*	Old growth ponderosa pine forests, canyon topography
Williams Creek*	White fir-dominated cool-moist mixed conifer forests
Electra	Glacial topography, old growth ponderosa pine forests
Grizzly Peak	Alpine, fens, willow carrs
Hermosa	Ponderosa pine forests, mixed conifer forests, aspen forests, spruce-fir forests, wetlands, Thurber fescue grasslands
Hidden Mesas	Old growth ponderosa pine forests, mesa topography
Martinez Creek	Old growth spruce-fir forests unburned for centuries
Navajo River	Thurber fescue grasslands, volcanic geology, Colorado cutthroat trout, riparian areas
Needle Mountains	Alpine, riparian, wetlands, aspen forests, granite and quartzite geology
Piedra	Old-growth mixed conifer forests
Porphyry Gulch	Alpine, spruce-fir forests, wetlands
* Existing RNA.	

Desired Conditions

3.12.1 Natural ecological processes (including succession, fire, insects, diseases, and flooding) are mostly unaltered by humans and shape the composition, structure, function, and landscape pattern of the vegetation.

3.12.2 Non-native species are absent or rare.

3.12.3 Human influence and structures are absent or rare.

Objectives

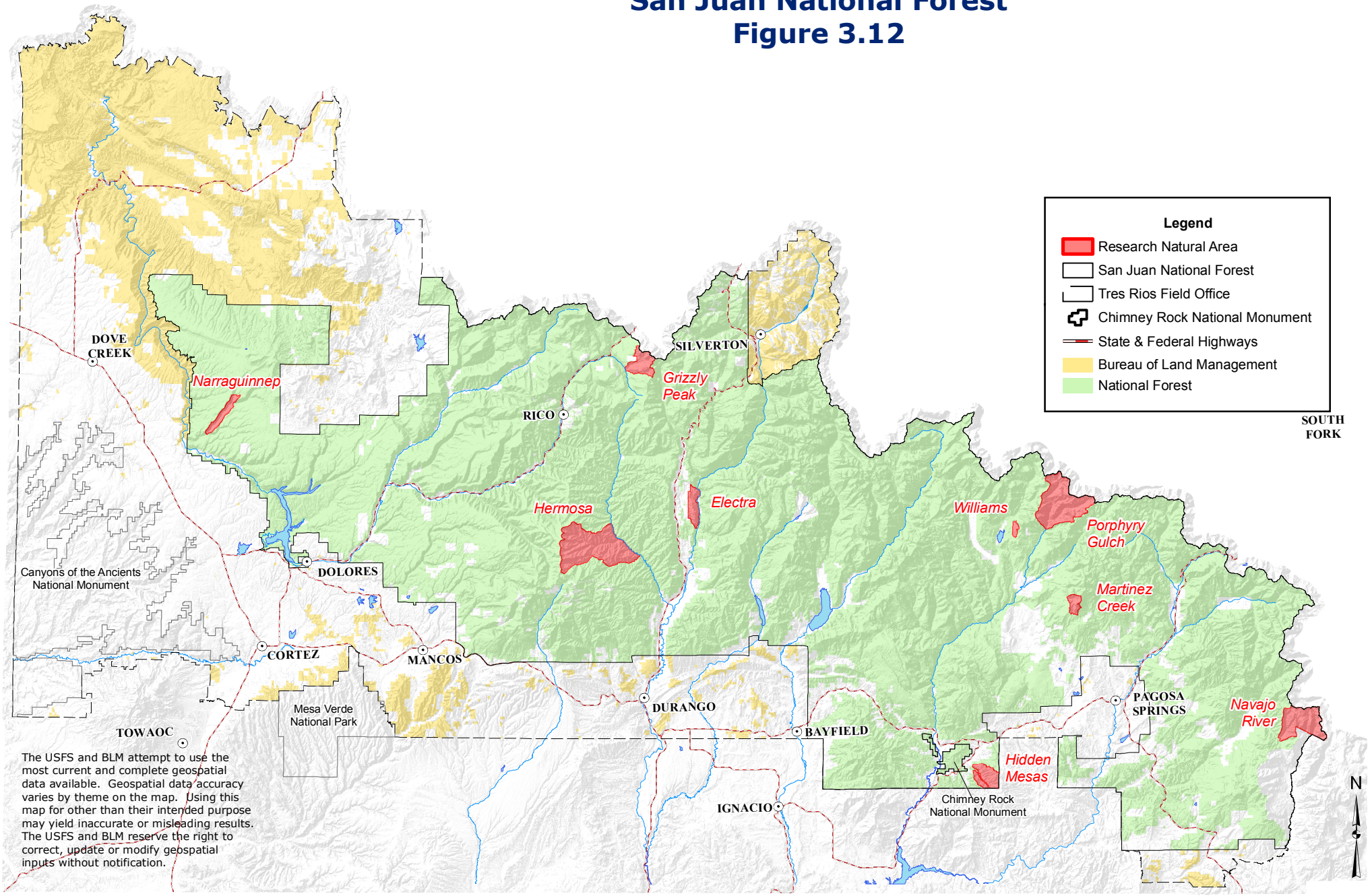
3.12.4 Within 4 years, complete the management plans and establishment records for all the newly designated RNAs on SJNF lands.

3.12.5 Within 4 years, revise the management plans for the Narraguinnep and Williams Creek RNAs.

Table 3.12.2: Research Natural Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Allowable
Prescribed burning	Restricted (may be used to meet desired conditions)
Mechanical fuels treatment	Prohibited
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Prohibited
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Prohibited
Livestock grazing	Restricted (may be used to meet desired conditions)
Facilities	Prohibited
Motorized (summer)	Prohibited
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Allowable
Mechanical transport	Prohibited
Road construction (permanent or temporary)	Prohibited
Minerals - leasable (oil and gas, and other)	Restricted, NSO
Minerals - locatable	Allowable (open to mineral entry, but impacts to natural resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

Research Natural Areas
San Juan National Forest
Figure 3.12



MDR
NAD 83, Polyconic Projection
August 19, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
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3.13 Gypsum Valley Area of Critical Environmental Concern (Tres Rios Field Office)

The Gypsum Valley ACEC contains 13,333 acres of BLM lands within the Big and Little Gypsum Valleys, and ranges in elevation from 6,100 to 6,500 feet. It is located in San Miguel County about 14 miles southwest of Naturita.

The Gypsum Valley ACEC is one of several northwest-southeast-trending valleys formed by the collapse of ancient salt domes. It contains gypsum outcrops and gypsum soils of the Paradox member of the Hermosa Formation that are unique and rare on TRFO lands. The ACEC contains known occurrences and abundant habitat for two BLM sensitive species: Gypsum Valley cat-eye (*Cryptantha gypsophila*) and Naturita milkvetch (*Astragalus naturitensis*). The ACEC also contains five species with G1, G2, S1, or S2 NatureServe Plant Community status rankings: *Lecanora gypsicola*, nodule cracked lichen (*Acarospora nodulosa* var. *nodulosa*), largeleaf gypsoplaca lichen (*Gypsoplaca microphylla*), winding mariposa lily (*Calochortus flexuosus*), gyp dropseed (*Sporobolus nealleyi*), and shortstem beardtongue (*Penstemon breviculus*). These plants are imperiled or critically imperiled globally or within Colorado and are at a high or very high risk of extinction due to extreme rarity, very restricted ranges, or extremely low populations (see Appendix U).

Several important animal species are found within the proposed ACEC. The rims of Big Gypsum Valley have historically provided nesting habitat for migratory raptors, including peregrine falcons and golden eagles, which are both Colorado BLM State Director's sensitive species. In addition, desert bighorn sheep, another Colorado BLM State Director's sensitive species, use the canyon rims as travel corridors between the benches above the canyon and the Dolores River below. Desert bighorn sheep and other big game species use the Dolores River corridor and the flats of Big Gypsum Valley as important winter range and for other seasonal use.

Desired Conditions

3.13.1 Biological soil crusts have high cover and are maintained or increased on the soils of this ACEC.

3.13.2 The relevance and importance values of this ACEC, as described in Appendix U, are maintained.

3.13.3 The gypsum soils maintain the soil productivity necessary to support and sustain the special status plant species that occur on them.

3.13.4 The special status plant species have self-sustaining populations and suitable habitat into which they can expand.

3.13.5 Special status plant species and their habitat are managed so that the viability of these species is not adversely affected.

Objectives

3.13.6 Limit motorized travel within the ACEC to designated routes to be determined during travel management planning.

Guidelines

3.13.7 Ground-disturbing activities should not occur or otherwise be mitigated on gypsum soils within the Gypsum Valley ACEC in order to protect the special status plant species for which they provide habitat.

3.13.8 Management activities should minimize, and attempt to avoid where possible, soil displacement, compaction, and trampling in the Gypsum Valley ACEC in order to protect special status plant species and their habitat. Any activities should occur when the plants and soils are least vulnerable to disturbance, such as when soils are frozen or snow covered.

3.13.9 Management activities should minimize impacts to nesting raptors and desert big horn sheep. Potential impacts to raptors include excessive noise and human disturbance during critical nesting periods. Potential impacts to desert big horn sheep include conflicts during critical lambing times and concentrated winter use.

Table 3.13.1 shows the allowable, prohibited, and restricted management activities and uses for the Gypsum Valley ACEC.

Table 3.13.1: Gypsum Valley Area of Critical Environmental Concern Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted (may be used to meet desired conditions)
Prescribed burning	Restricted (may be used to meet desired conditions)
Mechanical fuels treatment	Restricted
Timber production (scheduled on a rotation basis)	Not Applicable
Timber harvesting as a tool	Not Applicable
Commercial use of special forest products and firewood	Restricted (commercial seed collection may be allowed in some circumstances)
Land use ROWs, special use permits, and utility corridors	Restricted (avoid gypsum soils)
Livestock grazing	Allowable
Facilities	Restricted (avoid gypsum soils)
Motorized (summer)	Restricted (to designated routes to protect gypsum soils and sensitive special status species)
Motorized (winter)	Restricted (to designated routes to protect gypsum soils and special status species)
Non-motorized (summer and winter)	Restricted (Possible seasonal closures for recreational rock climbing may be enforced due to seasonal raptor use. See raptor timing limitations table in section 2.3 of this LRMP.)
Mechanical transport	Restricted (to designated routes to protect gypsum soils and sensitive special status plant species)
Road construction (permanent or temporary)	Restricted (to avoid gypsum soils)
Minerals - leasable (oil and gas, and other)	Restricted (NSO, CSU, and TL stipulations may apply to protect special status species, wildlife, soils, and water resources)
Minerals - locatable	Allowable (open to mineral entry, but impacts to gypsum soils, special status plant species, wildlife, and water must be minimized)
Minerals - saleable (materials)	Restricted (to avoid gypsum soils, special status species, wildlife, water, resources)

Additional Guidance

- 43 CFR 3809

3.14 Anasazi Culture Area of Critical Environmental Concern (Tres Rios Field Office)

The Anasazi Culture ACEC retains one of the highest densities of Ancestral Puebloan architectural sites within the planning area. These highly significant sites are critical to understanding Ancestral Puebloan lifeways across the landscape. The geographical uniqueness and the area's setting are important not only for providing much needed context for the interpretation of Northern San Juan Anasazi settlement patterns but also for preserving the future integrity of their material remains. The ACEC also contains the rare plants shortstem beardtongue and Naturita milkvetch.

The Anasazi Culture ACEC was originally designated in the San Juan/San Miguel Resource Management Plan, and encompassed the Mud Springs area, as well as the entirety of the area now known as Canyons of the Ancients National Monument. The majority of Canyons of the Ancients National Monument was released from ACEC designation in the Canyons of the Ancients National Monument Resource Management Plan (BLM 2010d). As a result of this management and jurisdictional change, the boundary of the Anasazi Culture Area ACEC is now amended to include only the Mud Springs area. The boundary of the ACEC has also been modified to remove the gravel pit.

The management emphasis for the Anasazi Culture Area ACEC is to protect and preserve this area's outstanding archeological sites and setting, and to develop appropriate recreational opportunities that do not result in damage to archaeological or ecological sites. A proactive management approach will take full advantage of the educational, interpretive, recreational, preservation, and scientific opportunities available.

Desired Conditions

3.14.1 The Anasazi Culture Area ACEC offers appropriate recreation and interpretive opportunities while archeological resources are preserved.

3.14.2 The existing character of the cultural and physical landscape is preserved.

3.14.3 Traditional cultural heritage values associated with cultural resources and landscapes within the ACEC are considered and protected.

3.14.4 Vegetation is managed to protect and enhance cultural resources.

3.14.5 The relevance and importance values of this ACEC, as described in Appendix U, are maintained.

3.14.6 Designated roads and trails are rerouted to mitigate impacts to cultural areas.

3.14.7 Recreational activities are actively managed in the designated areas, while protecting and mitigating impacts to cultural resources.

Objectives

3.14.8 Over the life of the LRMP, implement site steward and "adopt-a-site" programs.

3.14.9 Within 7 years, reroute or eliminate unauthorized and designated trails to avoid impacts to archeological sites.

Guidelines

3.14.10 Fencing should be used to keep OHV use on designated trails.

Table 3.14.1 shows the allowable, prohibited, and restricted management activities and uses for the Anasazi Culture Area ACEC.

Table 3.14.1: Anasazi Culture Area of Critical Environmental Concern Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Restricted to protect significant archaeological resources
Prescribed burning	Restricted to protect significant archaeological resources
Mechanical fuels treatment	Restricted to protect significant archaeological resources
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Restricted to protect significant archaeological resources
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted (minimize or avoid impacts to archeological resources)
Livestock grazing	Allowable
Facilities	Restricted to protect significant archaeological resources
Motorized (summer)	Restricted to designated roads and trails to protect significant archaeological resources
Motorized (winter)	Restricted to designated roads and trails to protect significant archaeological resources
Non-motorized (summer and winter)	Restricted to designated roads and trails to protect significant archaeological resources
Mechanical transport	Restricted to designated roads and trails to protect significant archaeological resources
Road construction (permanent or temporary)	Restricted to protect significant archaeological resources
Minerals - leasable (oil and gas, and other)	Restricted (NSO, CSU, and TL stipulations may apply to protect recreation and cultural values, water, plants, or other resources)
Minerals - locatable	Allowable (open to mineral entry, but impacts to archaeological resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

3.15 Mesa Verde Escarpment (Tres Rios Field Office)

Introduction

The Mesa Verde Escarpment area includes BLM lands adjacent to Mesa Verde National Park (Figure 3.27.1). Originally slated for inclusion in the designation of Canyons of the Ancients National Monument, this area has the highest density of Ancestral Puebloan architectural sites on BLM lands within the planning area. These highly significant sites are critical to understanding Ancestral Puebloan lifeways across the landscape. The temporal span and distribution of sites indicate that this area was consistently inhabited throughout the Ancestral Puebloan occupation of the Montezuma Valley, from the Basketmaker III period through the Pueblo III (A.D. 600–1300). Additionally, these sites are considered to be in pristine condition because access to this area has been highly restricted. The sites are surrounded by the designated wilderness area within Mesa Verde National Park and privately owned, undeveloped lands. The geophysical uniqueness and the relative isolation of the area's setting is important not only for providing much needed context for the interpretation of Northern San Juan Anasazi settlement patterns, but also for preserving the future integrity of their material remains.

The management emphasis for the Mesa Verde Escarpment is to focus opportunities to provide a scientific research and an outdoor learning laboratory, while ensuring protection and preservation of the area's outstanding archeological sites. A proactive management approach will take full advantage of the educational, preservation, and scientific opportunities available. This area is surrounded by private lands that have not yet been developed; however, focused management of this area is needed to address the impacts related to potential future development. Collaboration with the developers and landowners will be

emphasized in order to develop an understanding and appreciation of the archeological resources, as well as an understanding of the importance of protecting them. Acquisition and/or acquiring easements of adjacent lands to improve access and protection of cultural resources are encouraged.

Desired Conditions

3.15.1 Access to the Mesa Verde Escarpment is limited in order to protect and preserve archaeological resources.

3.15.2 User-made trails and other routes are rerouted or eliminated in order to avoid impacts to archeological sites.

3.15.3 Hazardous fuels are managed in order to protect and preserve archeological resources, and to reduce the risk of wildfire to adjacent private lands.

3.15.4 Cultural viewsheds are preserved; incompatible uses or developments are not authorized.

3.15.5 The existing character of the cultural and physical landscape is preserved.

3.15.6 Traditional cultural heritage values associated with cultural resources and landscapes within the ACEC are considered and protected.

3.15.7 Designated routes are limited to maintain the integrity of cultural resource values and for scientific research access.

3.15.8 Opportunities are sought to acquire adjacent lands and/or easements to improve access and protection of cultural resources.

Objectives

3.15.9 Over the life of the LRMP, conduct phased cultural resource inventory of the area.

3.15.10 Over the next 3 years, develop procedures to encourage, foster, and conduct high-quality scientific and scholarly research.

Table 3.15.1 shows the allowable, prohibited, and restricted management activities and uses for the Mesa Verde Escarpment.

Table 3.15.1: Mesa Verde Escarpment Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Restricted in order to protect significant archaeological resources
Prescribed burning	Restricted in order to protect significant archaeological resources
Mechanical fuels treatment	Restricted in order to protect significant archaeological resources
Timber production (scheduled on a rotation basis)	Not Applicable
Timber harvesting as a tool	Restricted in order to protect significant archaeological resources
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted to protect significant archaeological resources.
Livestock grazing	Allowable
Facilities	Restricted in order to protect significant archaeological resources

Management Activities and Uses	Allowable - Restricted - Prohibited
Motorized (summer)	Restricted to designated roads and trails
Motorized (winter)	Restricted to protect significant archaeological resources
Non-motorized (summer and winter)	Restricted in order to protect significant archaeological resources
Mechanical transport	Restricted in order to protect significant archaeological resources
Road construction (permanent or temporary)	Restricted in order to protect significant archaeological resources
Minerals - leasable (oil and gas, and other)	Restricted (NSO)
Minerals - locatable	Allowable (open to mineral entry, but impacts to archaeological resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

3.16 Falls Creek Archeological Area (San Juan National Forest)

Falls Creek Valley may contain archeological resources that could aid in efforts to study the earliest agricultural and sedentary societies in the southwestern United States. The area is an important and highly valued place for Native Americans, who view it as part of their heritage. The Falls Creek Archeological Area contains one of the earliest and best dated Basketmaker II sites ever documented. In 1988 the SJNF designated the area as the Falls Creek Archaeological Special Interest Area. These sites are preserved and protected for their scientific, educational, social, and cultural values.

The west side of the Falls Creek Archaeological Area is currently closed to the public; however, the area east of the road is frequented on a year-round, daily basis by residents and visitors taking advantage of the close proximity to Durango in order to enjoy the scenic beauty, open space, and recreational opportunities (Figure 3.27.2). The historic landscape, including the irrigated hayfields of the Hidden Valley Ranch, is managed by the SJNF. The Hidden Valley Ranch provides a window into the area's ranching heritage (offering one of the only hayfields open to public recreation anywhere in the region). These fields are managed in order to provide nutritious forage for big game dependent on this mild, southern exposure lowland for winter habitat. This area has been managed by the USFS as critical big game winter range since the land was acquired by the SJNF in 1985.

The Falls Creek Archaeological Area will continue to emphasize protection and preservation of significant archaeological deposits, wildlife diversity and maintenance of critical big game winter habitat, and compatible non-motorized recreational opportunities.

Desired Conditions

3.16.1 Archeological sites are protected and preserved for their scientific, educational, social, and cultural values.

3.16.2 Native American values are respected and preserved, and tribal members are provided special access to the area.

3.16.3 Access to the Falls Creek Rock Shelter is allowed to educational institutions through a special use permit.

3.16.4 Historic viewsheds (including the historic hayfields) are protected, enhanced, and preserved.

3.16.5 Native American tribes and Pueblos are consulted with regard to the development of appropriate off-site educational materials.

3.16.6 NAGPRA repatriation of items removed during the 1930s excavation is completed (including analysis of these items necessary in order to complete the cultural affiliation study).

3.16.7 The area continues to provide critical big game winter range habitat.

3.16.8 Wetlands are managed in order to retain the floral and faunal diversity that currently exists.

Objectives

3.16.9 Within 5 years, create a dispersed recreation plan that is congruent with desired conditions and that would be incorporated into the LRMP for the Falls Creek Archeological Area.

3.16.10 Within 1 year, implement a site-steward program.

3.16.11 Within 5 years, develop and implement a rock art preservation plan in order to mitigate deterioration.

3.16.12 Within 5 years, develop appropriate and sensitive off-site interpretive and educational materials. Make the information from the collection analyses available to researchers.

Table 3.16.1 shows the allowable, prohibited, and restricted management activities and uses for the Falls Creek Archeological Area.

Table 3.16.1: Falls Creek Archeological Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted in order to protect significant archaeological resources
Prescribed burning	Restricted (archaeological and historic resources must be protected from impacts from fire)
Mechanical fuels treatment	Restricted (archeological and historic resources must be protected)
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Restricted (archeological and historic resources must be protected)
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted to minimize impacts to archeological resources and protect viewshed
Livestock grazing	Prohibited
Facilities	Restricted to interpretive/informational signs, trailheads, and trails
Motorized (summer)	Restricted to designated roads and trails
Motorized (winter)	Restricted
Non-motorized (summer and winter)	Restricted
Mechanical transport	Restricted to designated roads and trails
Road construction (permanent or temporary)	Prohibited
Minerals - leasable (oil and gas, and other)	Administratively not available
Minerals - locatable	Allowable (open to mineral entry, but impacts to archaeological resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

3.17 Chimney Rock National Monument (San Juan National Forest)

The Chimney Rock National Monument is a treasure without parallel in the public lands system. The site has been recognized as being “the ultimate outlier” of the Chaco culture (which flourished from A.D. 900 through A.D. 1130). In recognition of its national significance, Congress has designated Chimney Rock as part of the Chacoan Outliers Protection Act of 1995 system. The Chimney Rock area exhibits many of the same hallmarks associated with Chacoan culture that earned Chaco Cultural National Historical Park a World Heritage listing. In addition, the Chimney Rock area also exhibits unique features associated with its location and setting within the landscape. It is the north-easternmost Chacoan site and is hypothesized to be an astronomical observatory. It is valued by Native Americans as part of their ancestral heritage (see Figure 3.27.2). In 2012 it was declared a national monument by Presidential Proclamation.

The Chimney Rock Interpretive Association currently manages this national monument with volunteers under a USFS special use permit. Under the direction of the Presidential Proclamation and this LRMP, Chimney Rock sites will be preserved and protected for their scientific, educational, and cultural values. The national monument will be managed in a manner designed to contribute to tourism (which is one the most powerful regional economic drivers in southwest Colorado). Visitor services and interpretation of the sites would be greatly improved by upgrading the existing visitor center. Archeological resources on Peterson Ridge and adjacent USFS lands should be researched in order to understand their potential relationship to the Chimney Rock National Monument.

Maintaining and developing additional partnerships will be critical for preserving, interpreting, and better understanding Chimney Rock National Monument. Partnerships with Native Americans, Fort Lewis College, the National Trust for Historic Preservation, the Chaco Interagency Management Group, the University of Colorado, History Colorado, and other research and preservation organizations have been, and will continue to be, essential in achieving these goals.

Desired Conditions

3.17.1 Chimney Rock National Monument is managed in an exemplary manner in accordance with the National Monument Proclamation.

3.17.2 Native Americans tribes and Pueblos are consulted with regard to the development of appropriate management and interpretation, and are allowed to use the monument for traditional and ceremonial uses, and their values are respected and preserved.

3.17.3 Compatible recreational opportunities for the public are provided, in accordance with the National Monument Proclamation.

Objectives

3.17.4 Within 3 years, develop a comprehensive management plan for the Chimney Rock National Monument.

Table 3.17.1 shows the allowable, prohibited, and restricted management activities and uses for the Chimney Rock National Monument.

Table 3.17.1: Chimney Rock National Monument Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Prescribed burning	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Mechanical fuels treatment	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Commercial use of special forest products and firewood	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Land use ROWs, special use permits, and utility corridors	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Livestock grazing	Restricted to preserve and protect the objects identified in the National Monument Proclamation
Facilities	Restricted to existing facilities and facilities identified in the Chimney Rock Management Plan
Motorized (summer)	Restricted to entrance road
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Restricted: Horseback travel is prohibited on interpretive trails
Mechanical transport	Restricted; bicycle travel is limited to NFS Road 617 and associated pullouts
Road construction (permanent or temporary)	Restricted to roads determined to be necessary for administration and protection of the objects identified in the National Monument Proclamation
Minerals - leasable (oil and gas, and other)	Administratively not available, except for parcels already leased in the Peterson Mesa area; If these leases expire they would then be not available; viewshed is NSO
Minerals - locatable	Allowable (open to mineral entry, but impacts to archaeological resource must be minimized; the agency can petition for the area to be withdrawn from mineral entry)
Minerals - saleable (materials)	Prohibited

3.18 Spring Creek Wild Horse Herd Management Area (Tres Rios Field Office)

Introduction

The Spring Creek HMA is located approximately 40 miles northeast of Dove Creek, Colorado (in Dolores and San Miguel Counties). The HMA comprises approximately 21,000 acres of BLM-administered public land.

Wild horses and burros are managed under the Wild Free-Roaming Horse and Burro Act of 1971, as amended (Public Law 92-195). The 1985 San Juan/San Miguel Resource Management Plan (BLM 1985) designated a wild horse emphasis area for the Spring Creek Basin. Portions of the Spring Creek HMA also emphasize watershed management (in order to reduce salinity into the Colorado River and for the watershed health of the McKenna Peak WSA). Scattered occurrences of the BLM Sensitive plant Gypsum Valley cat-eye (*Cryptantha gypsophila*) are present within the HMA. There is an also occurrence of pygmy sagebrush (*Artemisia pygmaea*) within the HMA. There is only one other occurrence of this G4, S1 ranked species in Colorado.

A Wild Horse Herd Management Area Plan (HMAP) was approved in October 1986 (BLM 1986b) and revised in 1994 (BLM 1994a). The HMAP objective is to maintain appropriate management level between 35 and 65 adult horses or an average of 50 adult horses. In 2005, additional analysis was completed in order to determine whether the existing management level was appropriate (based on an opportunity to provide additional AUMs for the herd area). The analysis showed that current management level was appropriate, considering that rangeland health standards (43 CFR 4180) were not being met, and that the few available AUMs would not improve herd genetics (#EA-800-2005-027; BLM 2005). In 2011, an environmental analysis was completed that approved instituting a fertility control program (DOI-BLM-CO-SO10-2011-0062) (BLM 2011i).

Desired Conditions

3.18.1 The Spring Creek Basin wild horse herd population is within an acceptable range.

3.18.2 Adequate genetic viability and variability exists in order to maintain a healthy wild horse herd.

3.18.3 Vegetation is diverse and provides sufficient cover in order to reduce salinity and to prevent sediment from reaching Disappointment Creek and the Dolores River.

3.18.4 The herd is managed via traditional helicopter gathers, bait trapping, fertility control programs, or other methods accepted by the National Wild Horse and Burro program.

3.18.5 Vegetation within the HMA is in a stable or upward trend, including diverse species composition and reduced erosion to provide a resilient ecosystem.

3.18.6 The Gypsum Valley cat-eye and pygmy sagebrush populations are maintained.

Objectives

3.18.7 Within 5 years, revise the Spring Creek Basin HMAP (BLM 1994a) to incorporate specific goals, objectives, and techniques to guide management of the Spring Creek HMA.

3.18.8 Within 5 years, revise the Spring Creek Basin HMAP (BLM 1994a) to incorporate specific goals, objectives, and techniques to guide management of the Spring Creek HMA, including management of Gypsum Valley cat-eye and pygmy sagebrush.

Table 3.18.1 shows the allowable, prohibited, and restricted management activities and uses for the Spring Creek Wild Horse HMA.

Table 3.18.1: Spring Creek Wild Horse Herd Management Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Allowable
Prescribed burning	Allowable
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Not Applicable
Timber harvesting as a tool	Not Applicable
Commercial use of special forest products and firewood	Restricted opportunities for firewood; however, gathering other forest products may be acceptable as long as gathering is not detrimental to wild horse management
Land use ROWs, special use permits, and utility corridors	Restricted to minimize disruption to the herd
Livestock grazing	Allowable; retire or redistribute available AMUs to watershed and soil protection as opportunity becomes available or permits return to BLM.
Facilities	Restricted
Motorized (summer)	Restricted to on roads only
Motorized (winter)	Restricted to on roads only
Non-motorized (summer and winter)	Allowable
Mechanical transport	Restricted to on roads only.
Road construction (permanent or temporary)	Allowable
Minerals - leasable (oil and gas, and other)	Allowable
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Allowable

Additional Guidance

- Wild Free-Roaming Horse and Burro Act of 1971
- Public Rangeland Improvement Act of 1978 Taylor Grazing Act of 1934, as amended
- 43 CFR 4700, Protection, Management, and Control of Wild and Free-Roaming Horses and Burros
- 43 CFR 4100
- Colorado Public Land Health Standards EA and FONSI, 1997
- Vegetation Treatment on BLM Lands in the 13 Western States (BLM 1991b)
- Integrated Weed Management Plan (CO-800-2008-075 EA) (BLM 2011c)
- BLM Manual 9015
- BLM Partners Against Weeds (BLM 1996)
- Various BLM IMs and Information Bulletins relating to wild horse and burro management
- Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act (8 CCR 1203-10)
- Spring Creek Basin Wild Horse Management Plan (BLM 1994a)
- Wild Horse Appropriate Management Level in the Spring Creek Basin HMA (EA #CO-800-2005-027) (BLM 2005)

3.19 Perins Peak Wildlife Management Area (Tres Rios Field Office)

Wildlife management areas provide for habitat features that are special, or limiting, to certain wildlife species. They provide the opportunity for maintaining diverse components for species sustainability found within each area's habitat management plan (including the restoration, maintenance, and/or improvement of these features for the target species, as well as for other species with habitats within the area). Timing stipulations and use restrictions may be applied in these areas in order to preserve diversity components.

The Perins Peak Wildlife Management Area consists of approximately 1,512 acres of BLM-administered public lands and approximately 3,400 acres of state lands administered by CPW. The area is located northwest of, and immediately adjacent to, Durango. Historically, the area has served as winter range for large herds of elk, mule deer, and a remnant population of bighorn sheep. Breeding populations of golden eagle, prairie falcon, and peregrine falcon add to the significance of the area. The area also supports populations of Merriam's wild turkey (*Meleagris gallopavo*). More than half of the elk herd of CPW Game Management Unit 74 is dependent on this area in severe winters. Rapid development in the Durango area has increased impacts to wildlife resources in the area due to land conversions, migration corridor disruption, and increased recreational pressures to disturbance-sensitive wildlife species. The TRFO works closely with CPW to manage the habitat and will seek future opportunities to consolidate ownership where practicable to improve wildlife management emphasis of the area.

Desired Conditions

3.19.1 Habitat diversity components are secure, undisturbed, and sufficient to sustain the wildlife populations that depend on the Perins Peak Wildlife Management Area in an urbanizing environment.

Program Emphasis

Under the direction of this LRMP, management emphasis would focus on habitat features and effectiveness for raptor reproduction, big game winter range, and other improvements for non-game birds and small mammals, in coordination and conjunction with adjacent CPW lands. The Perins Peak Wildlife Habitat Management Plan (BLM et al. 2003), which was prepared by the BLM in cooperation with the USFWS and CPW, outlines the emphasis and management objectives for the area. Within this Habitat Management Plan, a comprehensive list of management objectives is provided for raptors, big game winter range, habitat improvements, and public access.

Table 3.19.1 shows the allowable, prohibited, and restricted management activities and uses for the Perins Peak Wildlife Management Area.

Table 3.19.1: Perins Peak Wildlife Management Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted (project design would maintain or improve effectiveness and be of primary benefit to habitat and species objectives outlined in the Habitat Management Plan)
Prescribed burning	Restricted (project design would maintain or improve effectiveness and be of primary benefit to habitat and species objectives outlined in the Habitat Management Plan)
Mechanical fuels treatment	Restricted (project design would maintain or improve effectiveness and be of primary benefit to habitat and species objectives outlined in the Habitat Management Plan)
Timber production (scheduled on a rotation basis)	Not Applicable

Management Activities and Uses	Allowable - Prohibited - Restricted
Timber harvesting as a tool	Restricted (project design would maintain or improve effectiveness and be of primary benefit to habitat and species objectives outlined in the Habitat Management Plan)
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted (project design should maintain habitat effectiveness and species objectives as outlined in the Habitat Management Plan)
Livestock grazing	Restricted (project design would maintain or improve effectiveness and be of primary benefit to habitat and species objectives outlined in the Habitat Management Plan)
Facilities	Prohibited
Motorized (summer)	Restricted (timing of use and route restrictions maintain habitat effectiveness for species objectives outlined in the Habitat Management Plan)
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Restricted (timing of use and route restrictions maintain habitat effectiveness for species objectives outlined in the Habitat Management Plan; winter use is not allowed)
Mechanical transport	Prohibited
Road construction (permanent or temporary)	Restricted (construction timing, construction type, route, and use and timing of use conforms to habitat and species needs described in the Habitat Management Plan)
Minerals - leasable (oil and gas, and other)	Restricted - (CSU and TL, as defined for leasable minerals; maintains habitat effectiveness for species objectives outlined in the Habitat Management Plan)
Minerals - locatable	Allowable
Minerals - saleable (materials)	Prohibited

Additional Guidance

Other guidance includes the Perins Peak Wildlife Habitat Management Plan (CO-03 WHA-T1) (BLM et al. 2003).

3.20 O'Neal Hill Special Botanical Area (San Juan National Forest)

The O'Neal Hill Special Botanical Area is designated as a special area on the SJNF to protect and preserve its rare plant species. It contains the largest known population of Pagosa Springs bladderpod (*Lesquerella pruinosa*), which is a yellow-flowered member of the mustard family that occurs only near Pagosa Springs and in a small area in northern New Mexico. Pagosa Springs bladderpod has a G1 NatureServe conservation status rank, which means it is critically imperiled globally due to extreme rarity. The species is also on the Region 2 Regional Forester's Sensitive Species list. This botanical area, which is located about 14 miles north of Pagosa Springs, is about 130 acres in size and occurs at an elevation of about 8,100 feet. The area occurs on relatively flat plains and hills, and is primarily associated with the Mancos shale geologic formation.

Desired Conditions

3.20.1 Pagosa Springs bladderpod has self-sustaining populations.

3.20.2 Favorable habitat conditions exist for Pagosa Springs bladderpod.

3.20.3 Invasive plant species in the botanical area are absent or rare.

3.20.4 Pagosa Springs bladderpod is not trending toward federal listing under the ESA.

Objectives

3.20.5 Within 4 years, develop a management plan.

Standards

3.20.6 Management activities (including road construction) and motorized travel must not occur in the O'Neal Hill Special Botanical Area unless they are needed to achieve desired conditions or objectives, or for research or restoration.

Table 3.20.1 shows the allowable, prohibited, and restricted management activities and uses for the O'Neal Hill Special Botanical Area.

Table 3.20.1: O'Neal Hill Special Botanical Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted (may be used to meet desired conditions)
Prescribed burning	Restricted (may be used to meet desired conditions)
Mechanical fuels treatment	Restricted (may be used to meet desired conditions)
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Prohibited
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted (impacts to sensitive plant species should be minimized)
Livestock grazing	Restricted (impacts to sensitive plant species should be minimized)
Facilities	Prohibited
Motorized (summer)	Prohibited
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Allowable
Mechanical transport	Restricted (impacts to sensitive plant species should be minimized)
Road construction (permanent or temporary)	Prohibited
Minerals - leasable (oil and gas, and other)	Restricted (NSO stipulation may apply)
Minerals - locatable	Allowable (open to mineral entry; impacts to the botanical area must be avoided or minimized to the extent practicable)
Minerals - saleable (materials)	Restricted (impacts to sensitive plant species should be minimized)

3.21 Chattanooga Special Botanical Area (San Juan National Forest)

The Chattanooga Special Botanical Area is designated as a special area on SJNF lands to protect and preserve its rare plant species, rare plant communities, rare organic soils, and rare riparian area/wetland ecosystems. It contains iron fens, willow carrs, rich fens, ponds, and mineral springs. The iron fens are fed by highly acidic, mineralized springs from the west. Limonite terraces within the iron fens perch the water table and form an extensive network of pools and ponds. Colorado's iron fens, including the ones in this botanical area, are particularly unique because their water pH is similar to acid poor fens, whereas the ionic strength of their water is similar to rich fens (Cooper et al. 2002). The rich fens and willow carrs are fed by groundwater from the east and directly from Mineral Creek. This botanical area, which is located about 5 miles northwest of Silverton, is about 75 acres in size and occurs at 10,000 to 10,400 feet in elevation.

The iron fens of the Chattanooga Special Botanical Area are associated with the Engelmann spruce/bog birch/water sedge/sphagnum plant community, which has a G2 NatureServe conservation status rank, meaning it is imperiled globally due to its rarity. That community is characterized by an overstory of Engelmann spruce and bog birch (*Betula nana*), and a thick understory of whortleberry (*Vaccinium caespitosum*) and sphagnum (including *Sphagnum angustifolium*, *S. balticum*, and *S. girgensohnii*). *Sphagnum angustifolium* and *S. balticum* are on the Region 2 Regional Forester's Sensitive Species list. Until its discovery in this botanical area, the range of *Sphagnum balticum* in North America was thought to extend south only to southern British Columbia. Other notable species in these iron fens include bluejoint reedgrass (*Calamagrostis canadensis*), water sedge (*Carex aquatilis*), beaked sedge (*C. utriculata*), and wintergreen (*Gaultheria humifusa*). The rich fens and willow carrs are dominated by diamondleaf willow (*Salix planifolia*) and water sedge, and the mineral springs contain a rare liverwort (*Jungermannia rubra*).

Desired Conditions

3.21.1 The rare plants are vigorous and have self-sustaining populations.

3.21.2 The ecosystems and habitats on which the rare plants and plant community depend are sustained.

3.21.3 The ecological integrity of the fens and other wetlands are intact (including their native biota, mineral and organic soils, and hydrology).

3.21.4 The fens and wetlands have sustainable hydrologic conditions.

3.21.5 Invasive plant species are absent or rare.

Objectives

3.21.6 Determine the amount of snowmobile use that is occurring in and adjacent to the Chattanooga Special Botanical Area.

3.21.7 If snowmobile use in and adjacent to the Chattanooga Special Botanical Area increases significantly, put up interpretive signs that describe the purpose and values of the area and that notify the public that snowmobile use in the area is prohibited.

3.21.8 Within 4 years, develop a management plan.

Standards

3.21.9 Management activities (including road construction) and motorized travel must not occur in the Chattanooga Special Botanical Area unless they are needed to achieve desired conditions or objectives, or for research or restoration.

Table 3.21.1 shows the allowable, prohibited, and restricted management activities and uses for the Chattanooga Special Botanical Area.

Table 3.21.1: Chattanooga Special Botanical Area Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Prohibited
Prescribed burning	Prohibited
Mechanical fuels treatment	Prohibited
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Prohibited
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted (maintenance of existing utility line may be allowed)
Livestock grazing	Prohibited
Facilities	Prohibited
Motorized (summer)	Prohibited
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Allowable
Mechanical transport	Prohibited
Road construction (permanent or temporary)	Prohibited
Minerals - leasable (oil and gas, and other)	Restricted (NSO stipulation may be applied)
Minerals - locatable	Allowable (open to mineral entry; impacts to the botanical area must be avoided or minimized to the extent practicable)
Minerals - saleable (materials)	Prohibited

3.22 Smoothing Iron and Boggy Draw Old Growth Recruitment Areas (San Juan National Forest)

Old growth recruitment areas on SJNF lands are special areas where existing or potential old growth stands are managed for their old growth values through both active and passive management. They are also places that can be used for research, education, and interpretation.

The Smoothing Iron Old Growth Recruitment Area, which is located on Haycamp Mesa about 6 air miles northeast of the town of Dolores near Spruce Water Canyon, occurs on about 2,500 acres at an elevation of approximately 8,200 feet. The Boggy Draw Old Growth Recruitment Area, which is located about 6 air miles northeast of Dolores near House Creek, occurs on about 2,500 acres at an elevation of approximately 8,100 feet. These areas, which display old growth ponderosa pine stands on mesa tops with gentle slopes, are rare in the tableland landscapes on the west side of the SJNF.

Desired Conditions

3.22.1 Existing old growth ponderosa pine stands and their old growth attributes are protected.

3.22.2 Existing old growth ponderosa pine stands become larger as more of the lands adjacent to them develop old growth attributes.

3.22.3 Low-intensity ground fire occurs with a frequency that is similar to that which occurred during the reference period in ponderosa pine forests (12–30 years).

3.22.4 Desirable native plant species, including Arizona fescue, are abundant and well distributed.

3.22.5 Invasive plant species are absent or minor.

3.22.6 Evidence of active management, such as stumps and roads, are absent or minor.

3.22.7 Federal agencies and the public use these areas for research, education, and interpretation.

Objectives

3.22.8 Within the next 15 years, use low-intensity prescribed fire or low-intensity wildfire for ecological benefit to maintain, improve, or restore the composition, structure, or function of the ponderosa pine stands.

3.22.9 Within the next 15 years, use timber harvest treatments (if necessary) to maintain, improve, or restore the composition, structure, or function of the ponderosa pine stands.

3.22.10 Within the next 15 years, decommission roads that are not needed to achieve desired conditions.

3.22.11 Within the next 10 years, develop and implement interpretive plans for both areas.

Table 3.22.1: Smoothing Iron and Boggy Draw Old Growth Recruitment Areas Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted (to low-intensity)
Prescribed burning	Restricted (to low-intensity)
Mechanical fuels treatment	Restricted (to meet desired conditions)
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Restricted (to meet desired conditions)
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Prohibited
Livestock grazing	Allowable
Facilities	Prohibited
Motorized (summer)	Restricted (only designated routes)
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Restricted (only designated routes)
Road construction (permanent or temporary)	Restricted (to meet desired conditions)
Minerals - leasable (oil and gas, and other)	NSO
Minerals - locatable	Allowable (open to mineral entry; impacts to old growth areas must be avoided or minimized to the extent practicable)
Minerals - saleable (materials)	Prohibited

3.23 Dolores River Canyon

Introduction

The Dolores River, a tributary of the Colorado River, flows approximately 250 miles from its origins in the San Juan Mountains into Grand County, Utah, where it joins the Colorado River. A few miles below McPhee Reservoir, at the Bradfield Bridge Recreation Site, the Dolores River enters lands managed by the TRFO and begins an 85-mile journey through some of the most scenic canyon country in the southwestern United States. This stretch of river, known as the Dolores River Canyon, represents an astounding array of cultural and natural resources, which are reflected in the myriad of special management prescriptions layered across its landscape. Key resources in the area include recreation, suitable WSR segments, wilderness characteristics, cultural resources, geology, rare and unique plants and plant communities, riparian ecosystems, and wildlife. Overlying it all is a scenic backdrop of sheer cliffs, benches, and mesas that rival any of the more nationally recognized landscapes in the region.

Recreation

The Dolores River Canyon provides opportunities for a broad spectrum of recreational experiences. The river canyon is probably best known for whitewater rafting and kayaking (up to Class IV) beginning at the Bradfield Bridge boat access near Dove Creek. Since the construction of the McPhee Dam and Reservoir, boating has been dependent on flow releases and generally requires between 200 (canoes and kayaks) and 1,000 cubic feet per second (large rafts). These releases require a good snow year and generally occur between late May and early June.

While whitewater boating might be the most popular activity enjoyed in the canyon, there are outstanding opportunities for hiking, camping, OHV touring, mountain biking, and wildlife viewing as well. Developed camping is provided in the upper reaches of the canyon (Bradfield Bridge and Box Elder campgrounds), while more primitive, dispersed camping is required for overnight stays further downriver.

The river canyon from Bradfield to Bedrock was identified as an SRMA in the 1985 San Juan/San Miguel Resource Management Plan (BLM 1985) and a River Corridor Management Plan was completed in 1990 (BLM 1990). This portion of the Dolores River Canyon will continue to be managed as an SRMA, divided into several RMZs to provide for specific recreational outcomes and benefits (see Appendix E).

Wild and Scenic River Eligibility

This entire stretch of the Dolores River is suitable for inclusion into the National Wild and Scenic River System. ORVs have been identified for the reach as a whole and include recreation and scenery (whitewater boating and sandstone cliffs), fish and wildlife (roundtail chub [*Gila robusta robusta*], flannelmouth sucker, and bluehead sucker), geology (sandstone cliffs), ecology (privet [*Forestiera neomexicana*] and Eastwood's monkeyflower [*Mimulus eastwoodiae*]), and cultural resources (historic and prehistoric sites).

This stretch of river has been divided into each of the three eligibility classifications (recreational, wild, and scenic). The segment from Bradfield Bridge to the Dove Creek Pump Station (Mt. Sheep Point) is suitable as a wild classification due to the lack of roads, motorized use, and developed trails. Dove Creek Pump Station to Disappointment Creek is suitable as a scenic classification despite Snaggletooth Road, which is generally unobtrusive to the surrounding landscape. The segment from Disappointment Creek the Little Gypsum Bridge is suitable as a recreational designation due to the presence of the community of Slickrock and the access provided via multiple county roads. Finally, from the Little Gypsum Bridge down through the Dolores River Canyon WSA to Bedrock is suitable as a wild classification.

Lands with Wilderness Characteristics

The upper portion of the canyon (from Bradfield Bridge to nearly Disappointment Creek) was inventoried in 2011 and found to have wilderness characteristics. A portion of this unit, known as the Snaggletooth unit, from Bradfield Bridge to Mt. Sheep Point, will be managed for its wilderness characteristics.

Wilderness Study Areas

The northernmost portion of the Dolores River Canyon within the TRFO is within part of the Dolores River WSA, and is managed by the TRFO so as not to impair the ability of Congress to make wilderness determination at some point in the future.

Cultural Resources

The Dolores River Canyon has been a focal point of human interest, use, and occupancy dating back at least 11,000 years. Evidence of this use can be seen and experienced along the length of the river. Cultural resources include rock shelters, petroglyph panels, resource procurement and processing areas, and historic camps, homesteads, and trails. These sites contribute to our understanding of the area and its importance to the human experience over time.

Geology

The Dolores River is up to 1,100 feet deep in places and cuts through multiple geologic formations spanning nearly 300 million years of earth's history from the Pennsylvanian through Cretaceous periods. Rock formations in the canyon record the passing of ancient seas and vast deserts. The prominent formation is the cliffs of Wingate sandstone. Major tributaries such as Coyote Wash, Bull Canyon, and Wild Steer Canyon display slickrock sculpted by wind and water and provide additional habitat for unique plant and animal populations.

Rare/Unique Plants and Plant Communities and Riparian Ecosystems

Another natural resource that makes the Dolores River Canyon special is the variety of plant life found within its confines. Tucked along the canyon floor, along the cliff faces, or hidden within hanging gardens are rare, unique, and even globally impaired species. Old growth ponderosa groves, box elder, and Fremont cottonwood (*Populus fremontii*) galleries provide shade along the river's edge for boaters and animals alike. The New Mexico privet is a riparian shrub that is relatively common in the area, but extremely rare on a global scale. Also found in the canyon, usually in hanging gardens around seeps and overhangs, is the bright red Eastwood's monkeyflower, which is also considered extremely rare or imperiled within the state, and rare globally. In addition to rare plants and plant communities, the Dolores River Canyon includes excellent examples of more common plant communities useful as biodiversity reserves and reference areas. Many of these species and communities are threatened by human activities and invasive, non-native species. The BLM is an active member and supporter of the Dolores River Restoration Partnership, which was founded to reduce or eliminate the threats to native vegetation and riparian functionality from tamarisk and other invasive species.

Wildlife

The Dolores River Canyon provides important habitat for a variety of species ranging from big game animals to tree frogs. The canyon is home to a population of desert bighorn, one of only three herds in the state. To aid in the viability of this herd, a seasonal motorized closure is placed on a BLM-administered portion of Snaggletooth Road during the spring lambing period (February 1–April 30, inclusive) from near Slickrock to Snaggletooth Rapid. The canyon also provides habitat for peregrine falcons, golden eagles, and other sensitive or listed avian species.

The river itself provides crucial habitat for many aquatic species including roundtail chub, flannelmouth sucker (*Catostomus latipinnis*), bluenose sucker (*Notropis welaka*), red-spotted toad (*Bufo punctatus*), tiger salamander (*Ambystoma tigrinum*), and canyon tree frog. Water levels in the river are controlled by the dam below McPhee Reservoir, which was constructed by the US Bureau of Reclamation as part of the Dolores Project and is operated by the Dolores Water Conservancy District.

Desired Conditions

3.23.1 Key resources in the canyon (including recreation, WSR suitability, wilderness characteristics, archeology, geology, rare and unique plants and plant communities, riparian ecosystems, and wildlife) are protected and preserved.

3.23.2 Invasive species (including tamarisk, Russian knapweed [*Acroptilon repens*], and Canada thistle [*Cirsium arvense*]) are minor components of the riparian systems of the Dolores River and its tributaries.

3.23.3 The scenic integrity of the canyon is unaltered and or otherwise mitigated to keep structures and new construction out of view from the river bottom.

3.23.4 Recreational opportunities within the canyon corridor are maintained and enhanced.

3.23.5 Access to the river is maintained or improved outside areas classified as wild.

Objectives

3.23.6 Use integrated pest management on the Dolores River Canyon to treat invasive species.

3.23.7 Over the life of the LRMP, restore riparian and aquatic ecosystems in the Dolores River Canyon and its tributaries.

3.23.8 Over the next 20 years, enhance the resiliency of Dolores River Canyon corridor and provide refugia for species on 100 acres of TRFO lands in the Dolores River watershed through implementation of travel management decisions, recreation management plans in the watershed ecosystems, invasive species management projects, or other management activities.

Guidelines

3.23.9 Management activities and recreational use should avoid or minimizes impacts to rare or unique plant communities.

Table 3.23.1 shows the allowable, prohibited, and restricted management activities and uses for the Dolores River Canyon.

Table 3.23.1: Dolores River Canyon Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Restricted within the canyon to protect other resource values; naturally ignited and human-made fire will be suppressed
Prescribed burning	Restricted to management actions that enhance resource characteristics
Mechanical fuels treatment	Restricted to management actions that enhance resource characteristics
Timber production (scheduled on a rotation basis)	Restricted to areas above Canyon Rim within ponderosa and oak Brush treatment area
Timber harvesting as a tool	Restricted to areas above Canyon Rim within ponderosa and oak brush treatment area.
Commercial use of special forest products and firewood	Restricted to areas above the canyon rim
Land use ROWs, special use permits, and utility corridors	Restricted (to minimize impacts to canyon resources and protect the viewshed)
Livestock grazing	Allowable
Facilities	Restricted (development of recreation facilities may be allowed)
Motorized (summer)	Restricted (see section 2.14; additionally, there is a motorized timing limitation within desert bighorn lambing areas between February 1 and June 30)
Motorized (winter)	Restricted (see section 2.14; additionally, there is a motorized timing limitation within desert bighorn lambing areas between February 1 and June 30)
Non-motorized (summer and winter)	Restricted (see section 2.14; timing restrictions may apply to protect wildlife habitat)
Mechanical transport	Allowable outside the lands managed for wilderness characteristics
Road construction (permanent or temporary)	Restricted to existing county roads within the canyon
Minerals - leasable (oil and gas, and other)	Restricted (NSO and TL leasing stipulations may apply for the canyon corridor, viewshed protection, and to protect desert bighorn lambing areas
Minerals - locatable	Allowable (open to mineral entry; impacts to canyon resources and viewshed should be minimized to the extent practicable)
Minerals - saleable (materials)	Prohibited

Additional Guidance

- Dolores River Corridor Management Plan (BLM 1990)

3.24 Silverton

The Silverton area includes the Alpine Loop Backcountry Byway, portions of the San Juan Skyway, the Silverton SRMA, and the town of Silverton (see Figure 3.27.1). The Silverton Ski Area and the Durango-Silverton Narrow-Gauge Railroad also operate within this area. A portion of the Continental Divide National Scenic Trail and the Colorado Trail pass through this area.

The Silverton area has outstanding outdoor opportunities, extraordinary scenery (accessed by two byways and an extensive network of rough roads and trails), sensitive plant and animal habitats, and diverse year-round nature-based recreation and adventure tourism. The town of Silverton's history, and vintage architecture, is recognized by residents and visitors as a precious cultural resource. Silverton, which has strong community values and a "sense of place," is a place where it is possible to "step back in time."

More than 300,000 people visit the area annually primarily due to heritage tourism, recreation, and wilderness access. These are the main economic contributors to local communities. Activities for visitors include camping, hiking, mountain biking, wildlife and wildflower viewing, winter sports, OHV use, and heritage tourism. The area is well suited to day trips, as well as to multi-day excursions.

Situated primarily above 9,000 feet, this is largely a sensitive and beautiful subalpine to alpine environment. This area has important biological value (including its essential function as a linkage area for wildlife across the San Juan Mountains and north to other parts of Colorado). The valleys and mountain passes provide key linkage corridors for migratory wildlife and wide-ranging carnivores (e.g., Canada lynx [*Lynx canadensis*]). The high country provides a large block of alpine and tundra habitat that is contiguous with adjacent public lands. This provides key habitat areas for a suite of unique species specially adapted to this fragile and harsh environment (including the endangered Uncompahgre fritillary butterfly [*Boloria acrocnema*], the white-tailed ptarmigan, and the brown-capped rosy-finch [Leucosticte *australis*], Rocky Mountain bighorn sheep, and Colorado cutthroat trout). The Silverton area contains peat-forming wetlands called fens. Fens require thousands of years to develop and cannot easily be restored once damaged. Rare and sensitive plants are found only in these fens. The Silverton area is also the only area where iron fens are found within the planning area. Iron fens are a unique type of fen found in areas with geology that produces acidic, metal-rich conditions. The San Juan Mountains are one of only a few places in the world that contain iron fens.

Many local residents are active stewards of this area and have strong concerns regarding the protection of the unique environment. Concerns expressed by residents and visitors include issues related to recreation and travel management, cultural resource protection, sheep grazing, protection of scenic views and fragile tundra, adequate visitor information and services, mining impacts, economic benefits, conflicts between residents and tourists, and conflicts between motorized and other users.

The combination of road access, rewarding vistas, and outstanding remnants of the hard-rock mining heritage make the Silverton area one of the most spectacular high-elevation landscapes in the United States.

Protecting the heritage of the amazingly persistent hard-rock miners is vital to preserving the nation's history, as well as the allure of the Silverton area. Historic sites within the Silverton area include mills, dams, hydro-electric power houses, water flumes, shaft houses, tramways, miners' cabins, assayer offices, boarding houses, powder houses, toll roads, railroads, mining camps, and countless mine shafts and adits. These sites are deteriorating in the harsh environment and as a result of the impacts from the increasing numbers of visitors. Private land development also threatens the integrity of the cultural landscape.

Mineral exploration, mining, and ore processing was the focus of activity in the Silverton landscape since the late 1800s. The remnants of this activity provide the road network and historic focus for heritage tourism and also left a legacy of hazardous open mines and water quality issues necessitating the need for an AML program. The AML programs on both USFS and BLM lands have the dual focus of mitigating physical safety hazards of abandoned mines and improving water quality that has been degraded by mining. The physical safety closures are often done in conjunction with the Colorado Division of Reclamation, Mining and Safety, who can efficiently combine work on federal and private

lands. Water quality work can consist of removal and reclamation of mine waste rock piles and mill tailings piles, water control to keep water from getting to mining areas where it can be contaminated, or treatment of contaminated water. The BLM and USFS partner with numerous entities in this work, including the Colorado Division of Reclamation, Mining and Safety, USGS, EPA, USFWS, mining industry, environmental and educational groups, and community members.

As the result of the configuration of mineral patents and private lands, San Juan County has a somewhat fragmented land ownership pattern of public lands isolated by private lands sometimes called “splinters” or “slivers.” These splinters or slivers can range in size from less than an acre up to 40 acres and oftentimes make accessibility to public lands difficult.

In recent years, the uses of mineral patents and private lands in San Juan County have shifted from mining to recreation and residential uses, either seasonal or permanent. The proliferation of cabins on parcels of 5 acres or more has increased ROW applications to the BLM for access and other infrastructure needs. Consolidation of ownership would result in more efficient and effective land management for federal, state, and local governments. This consolidation can take place through proposals for land acquisitions, sales (disposals), and/or exchanges. The BLM may retain rights such as conservation easements, trail easements, or ROWs in these transactions for the public’s benefit.

In keeping with the BLM mission of “serving communities,” lands in San Juan County near Silverton may be made available for recreation and public purposes or sold either competitively or directly for expansion of residential, commercial, recreation, or infrastructure uses.

Residents, visitors, and public land managers all see many opportunities for sustainable conservation of the Silverton area. Due to its complex resource values, and to the high levels of public interest, successful strategies for conservation will continue to depend on partnerships (including with local, state, tribal, and other federal agencies; historic preservation advocates and agencies; non-profit organizations; interpretive associations; commercial recreation providers; and local businesses). Management tools (including land acquisition, land exchange, and conservation easements) would be critical to the protection of high-priority lands within the larger cultural landscape, the mitigation of resource impacts, and the improvement in land conservation areas or national monuments, which may also be considered, in order to give the area appropriate recognition and protection.

The Alpine Triangle Cultural Resources Management Plan (CRMP) provides guidance for the management and interpretation of cultural resources in the Silverton SRMA (BLM 1994b) (see Appendix E). Under the direction of the LRMP, management will be intensive and include visitor facilities for interpretation and resource protection (including parking, trailhead facilities, signage, and trail maintenance). Regulations and visitor guidance will also play a role in protecting resources, as well as in enhancing visitor experience (including camping restrictions, travel management for motorized and non-motorized uses, resource protection, and visitor safety related to mines).

Successful implementation of the LRMP will depend on ownership patterns. Cooperation with state historic and heritage programs; San Juan, Ouray, and Hinsdale Counties; local communities and their residents; local, state, tribal, and other federal agencies; non-profit organizations; interpretive associations; businesses; and public land permittees will be emphasized. Expansion of on-the-ground signs and patrols to effective levels will also be key to successful heritage tourism and resource protection. Special emphasis will be given to the protection of cultural viewsheds that are in jeopardy due to the impacts of incompatible private development.

Desired Conditions

3.24.1 Interpretation of the historic landscapes and features of the Silverton SRMA is made available through a range of effective and appropriate venues. Information is designed to enhance the touring experience and encourage the greatest extent of appreciation and protection of these precious assets.

3.24.2 Commercial summer and winter recreation opportunities are available through permitted outfitter/guides and the Silverton Ski Area.

3.24.3 Recreational uses (including motorized/non-motorized travel or camping) are at sustainable levels within ROS settings.

3.24.4 Recreation management compatible with the area's cultural and natural resource management goals is allowed and promoted.

3.24.5 High-priority historic resources are stabilized and preserved for future generations.

3.24.6 The built environment supports essential visitor services, heritage tourism and interpretation, and recreation opportunities. Design elements (including scale, materials, and colors) complement the natural environment and are consistent with the architectural vernacular of local historic structures.

3.24.7 Support services are located within, or close to, gateway communities.

3.24.8 Local communities serve as gateways to the Silverton area, take an active role in stewardship of surrounding public lands, and receive lifestyle, community, and economic benefit. The site-stewardship program and TRFO presence are fully effective for resource protection, visitor contact, education, and safety.

3.24.9 Plants and wildlife unique to the area (including Canada lynx/lynx habitat, fens, bighorn sheep, native Colorado Cutthroat trout, Uncompahgre fritillary butterfly, white-tailed ptarmigan, and brown-capped rosy-finch, and other alpine obligate species) are effectively protected and managed in conjunction with other actions.

3.24.10 Water quality meets or exceeds state standards, where possible.

3.24.11 Although private land access is provided, as required, opportunities for protection of key resources are sought through the county development process, easement options, and acquisition.

3.24.12 High-priority parcels of land are protected and preserved through methods that include acquisition, land exchange, or conservation easements.

3.24.13 Where public lands 1) are isolated by surrounding private parcels with limited or no public access, 2) have minimal cultural/natural resource or recreation values to protect, and 3) are not needed for any federal project or resource management activity, the BLM may consider exchanges, sales or other disposal in order to improve the overall management of the public lands. Each proposal will be evaluated on a case-by-case basis, including environmental analysis under NEPA.

3.24.14 The responsibility to provide appropriate marketing and adequate interpretation, conservation education, and recreation information is understood and shared by agencies, partners, commercial outfitter/guides, and businesses.

3.24.15 The transportation system throughout the Silverton area meets the desire of visitors for access, provides a range of interesting touring experiences, and is designed in order to limit access to sites in need of protection.

3.24.16 AML and mining clean-up activities address resource protection and public safety.

3.24.17 Lands would remain open to mineral entry except where limited and specific needs for withdrawal or segregation. When possible, new mining projects would consider reclamation and remediation of historic mining operations to the extent economically, technologically, and legally possible.

Table 3.24.1 shows the allowable, prohibited, and restricted management activities and uses for the Silverton area.

Table 3.24.1: Silverton Area Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Restricted (wildfire for ecological benefit would be allowed in high-elevation spruce-fir, but emphasis will be put on protecting historic structures and private property)
Prescribed burning	Restricted (may be used in order to improve wildlife habitat, including bighorn sheep.)
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Restricted
Timber harvesting as a tool	Restricted
Commercial use of special forest products and firewood	Restricted to Christmas trees, firewood post and poles, mushrooms, and medicinal plants collected in the area
Land use ROWs, special use permits, and utility corridors	Restricted (surface disturbance should be minimized; utilize existing corridors and ROW where practicable)
Livestock grazing	Restricted to grazing allotments.
Facilities	Allowable
Motorized (summer)	Allowable
Motorized (winter)	Allowable
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Restricted (allowable for access to valid existing rights and for effective public access.)
Minerals - leasable (oil and gas, and other)	Restricted (NSO, CSU, and TL stipulations may apply)
Minerals - locatable	Restricted (allowable where natural, cultural, and/or scenic values are not degraded)
Minerals - saleable (materials)	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)

3.25 HD Mountains (San Juan National Forest)

The HD Mountains (MA 2) total approximately 49,000 acres (see Figure 3.27.2). The area's elevation ranges from just over 6,000 feet to just under 9,000 feet. Private and state lands (located primarily along the flanks of the USFS-administered lands) make up a small portion of the HD Mountains area (and are not subject to the direction of the LRMP). A 25,140-acre CRA within the HD Mountains forms the core of the MA.

The roadless area provides many social and ecological benefits. As urban areas grow in southwest Colorado, undeveloped private lands continue to be converted to urban areas and rural infrastructure. In the increasingly developed landscape in the vicinity of the HD Mountains, this large unfragmented tract of land serves a critical role (in that it provides functioning watersheds and biological strongholds that promote diversity for plant and animal populations). The area provides a large, relatively undisturbed landscape with opportunities for dispersed outdoor recreation (opportunities that diminish as open space and natural settings are developed elsewhere). The area also serves as a bulwark against the spread of non-native invasive plant species and provides a reference area for study and research related to development in the roadless area.

The HD Mountains area encompasses the northeastern portion of the San Juan Basin (which is a geologic structure containing one of the largest natural gas reservoirs in the world). The majority of the area has been leased for oil and gas development, and markets have prompted additional interest and investments in gas wells and associated facilities and infrastructure in the San Juan Basin. Natural gas development in the HD Mountains is controversial due to the potential impacts to roadless area values, surface water and groundwater, wildlife habitat, cultural resources, property values, tax revenues, employment, and air quality in the Weminuche wilderness area and the Mesa Verde National Park Class 1 air quality areas.

Companies or individuals holding existing valid leases have legal, non-discretionary development rights. Over the next few decades, as gas is produced and transported, the impacts of development will be evident; however, in the long-term, the SJNF would manage its lands so that facilities (including all surface and subsurface features related to management activities) would be reclaimed when no longer needed, so that altered lands would be restored to natural conditions. Planning for, and administering, management activities with the intent to ultimately reclaim development areas will make for a more rapid and successful recovery to natural conditions. An important element of this recovery effort is the approximately 22,400 acres of the roadless area that would remain unroaded under the gas field development plan authorized by the Northern San Juan Basin FEIS and ROD (BLM and USFS 2006; USFS and BLM 2007).

Although the primary values and important characteristics listed below are not all unique to the HD Mountains, the fact that they all occur in the same area makes the HD Mountains unique and deserving of special management approaches. The overall goal of management approaches in the HD Mountains is to maintain, improve, and/or return these values and characteristics to the landscape. These values and characteristics are described below.

The Northern San Jan Basin FEIS and ROD was signed on April 4, 2007, and provides guidance for gas-field development in the HD Mountains area. The development approach required by the FEIS/ROD balances valid existing gas development lease rights with legitimate social and environmental issues. It also sets the stage for the long-term goal of returning the area to a natural condition. Under the direction of the LRMP, the program approach would include comprehensive implementation, monitoring, mitigation, and reclamation plans for all phases of project development that address gas seepage, water quality/quantity, landslides, wildlife, vegetation, recreation, transportation, visual resources, noise, health and safety, air quality issues, and the minimization of impacts to the CRA.

In addition, a CRMP will be developed in consultation with the State Historic Preservation Office and other consulting parties. The CRMP will provide a framework in which to address cumulative impacts to cultural resources and will provide strategies for proactive management of cultural resources within the Northern San Juan Basin area of potential effects (which includes the HD Mountains area).

In addition, hazardous fuels reduction projects will continue to prioritize the WUI-related to SJNF/private land boundaries.

Noxious weeds are managed cooperatively with the State of Colorado (especially in relation to impacts to the Little Squaw Creek drainage).

Primary Values and Important Characteristics

Roadless Area: The HD Mountains area includes the 25,140-acre HD Mountain CRA. This area is important for recreational opportunities, pristine and primitive conditions, wildlife habitat, and roadless values (including those described above). The roadless area may also take pressure off of the more heavily used wilderness areas and WSAs within the planning area by providing solitude and quiet, as well as dispersed recreation opportunities.

Wildlife Habitat: The HD Mountains area, and the associated CRA, represent important, unfragmented wildlife habitat. They also provide connectivity to other important wildlife habitats. The combination of elevation, exposures, and vegetation also means that much of the area is winter range. In addition, important migration corridors for big game and other migrating wildlife are present in the area. The relatively unique occurrence of oak brush on north-facing slopes in the HD Mountains adds to the importance of the area as bear habitat.

Archeological Resources: The HD Mountains area contains important archeological resources (including the Spring Creek, Sauls Creek, Armstrong-Ritter, Turkey Creek, and Peterson Gulch Proposed National Register Districts, and other archeological sites) resources offering unique information and values. These sites and districts may provide information related to Chimney Rock, neighboring populations in the lower San Juan Basin (including Gobernador Valley and Chaco Canyon), and settlements to the west (including Mesa Verde National Park and Canyons of the Ancients National

Monument). They may also provide important clues about chronology and settlement patterns, relationships with temporally parallel neighboring populations, and resource utilization across the HD Mountains area landscape.

Geology and Geomorphology: The HD Mountains area is noteworthy for its geology, topography, and landslides. It also contains many areas of steep, unstable, erosive soils and slopes, as well as the Fruitland Formation, which is one of the most productive formations for natural gas in the San Juan Basin. The Fruitland Formation is exposed at the surface in the HD Mountains area, in a feature known locally as the Outcrop. The Outcrop is an important hydrogeologic feature connected to the Fruitland Formation coalbed methane gas reservoir and freshwater aquifer.

Surface Water and Groundwater Resources: Due to the area's dry climate and the unique hydrogeology of the Fruitland Formation, surface water and groundwater are critical resources in the area. There are important water resources connected to the Fruitland Formation, and freshwater springs are present in the core area of the HD Mountains area.

Vegetation: The HD Mountains support a variable mix of vegetation types, ranging from sagebrush to cool-moist mixed conifer forests. Old growth ponderosa pine forests and aspen forests still stand in portions of the HD Mountains area. The stands of old growth ponderosa pine in the HD Mountains area are particularly important (because this is a rare resource in the planning area). In addition, *Townsendia globella* and the riparian natural plant communities of boxelder-narrowleaf cottonwood/red osier dogwood forest, strapleaf willow shrubland, and narrowleaf cottonwood-rocky mountain juniper forest are also important vegetation types of the HD Mountains.

Social and Economic Values: The existing and potential natural gas resources in the HD Mountains area have significant direct and indirect economic benefits for the local and regional area related to gas-field development. The area also provides important social and economic value to the local area (including motorized and non-motorized recreation, primitive solitude, hunting, enjoyment of scenic vistas, and benefits related to gas-field revenues and taxes). Examples of these values include low residential property taxes, as well as new or improved city and county facilities, services, and infrastructure.

Recreation: Recreational opportunities in the HD Mountains area include wide open vistas, as well as views of Chimney Rock, the Piedra River valley (to the east), and the Pine River valley (to the west). The core roadless area provides opportunities for hiking, hunting, and horseback riding in an environment of natural sights and sounds. There are motorized trails on the western and eastern flanks of the HD Mountains.

Livestock Grazing: Livestock grazing is an important use of the HD Mountains area (which has several active allotments that would continue to be used). This use is not expected to increase or decrease significantly in the future.

Fire and Fuels Management: Fire and fuels management are important activities in the HD Mountains area. These management activities would be aimed at reducing fire risk to private lands and residences along the flanks of the core area, as well as improving the overall health of the lands within the planning area and restoring a more natural condition.

Desired Conditions

3.25.1 Specific actions for cultural resources are protected, preserved, and interpreted as directed in the Northern San Juan Basin CRMP.

3.25.2 High-priority historic and prehistoric resources are stabilized and preserved for future generations.

3.25.3 The Spring Creek, Sauls Creek, Armstrong-Ritter, Turkey Creek, and Peterson Gulch National Register Districts/Proposed National Register Districts are maintained in an undisturbed condition and protected from impacts (including from vandalism, visual intrusion, surface disturbances, and erosion).

3.25.4 Motorized travel occurs on designated motorized roads and trails within the boundaries of the Spring Creek, Sauls Creek, Armstrong-Ritter, Turkey Creek, and Peterson Gulch National Register Districts/Proposed National Register Districts.

3.25.5 Scenic integrity meets an overall moderate scenic integrity objective, and areas of high scenic integrity are maintained, wherever practicable.

3.25.6 Although private land and mineral access may be authorized, as appropriate, opportunities to protect private and other key resources is sought through cooperative efforts with local, state, tribal, and other federal agencies.

3.25.7 Coordination between local, state, tribal, and other federal agencies is effective and ongoing (especially regarding the integration of management for the San Juan Basin gas field).

3.25.8 Water quality is maintained at current, or improved, conditions. Water quantity is maintained at current levels, unless affected by natural factors (including drought).

3.25.9 In general, management activities maintain or improve roadless area values, wherever practicable, with a long-term goal of returning the landscape to an unroaded condition. Existing roads in areas such as Spring Creek, Sauls Creek, Turkey Creek, Goose Creek, Lange Canyon, Fosset Gulch, and the Relay Tower Road, as well as motorized trails proposed under the Northern San Juan Basin FEIS/ROD Travel Management Plan (USFS and BLM 2007) remain open to motorized travel indefinitely.

3.25.10 Development practices allow for efficient extraction of fluid mineral resources in order to maximize recovery and related economic benefits (including property tax base and other indirect social and economic benefits to the local and regional area).

3.25.11 Mineral resources are developed so that the area can be returned to a relatively natural setting as production phases out.

3.25.12 Existing mineral leases are reasonably developed using the minimum size and amount of facilities necessary. Future mineral leases are issued with NSO stipulations.

3.25.13 Facilities are designed and constructed with the goal of ultimately reclaiming them to closely resemble pre-construction conditions.

3.25.14 Facilities are located in order to minimize or avoid construction in steep, erosive, unstable, highly visible, and/or other critical resource areas (including water influence zones, areas with low potential for revegetation, and areas of known habitat for sensitive, threatened or endangered plant and animal species).

3.25.15 Where facilities are required, they are collocated, to the extent practicable, in order to reduce overall disturbance and indirect impacts (e.g., vehicle trips, air quality impacts, etc.).

3.25.16 Reclamation plans are an integral component of management activities.

3.25.17 Natural resources unique to the area (including old growth ponderosa pine forests, wildlife habitat, and water sources) are effectively protected and managed in conjunction with other actions.

3.25.18 Wildlife habitat effectiveness and connectivity is maintained.

3.25.19 Wildlife habitat and big game winter range are protected, enhanced, or replaced.

3.25.20 Management activities avoid disturbance to old growth vegetation. Prescribed fire may be used in old growth vegetation areas after site-specific field review and documentation of analysis and affirmative decision is completed.

3.25.21 Forest health, restoration, and fuels management are routine and recurring management activities (especially along the flanks of the HD Mountains). Forest ecosystem health is consistent with minimally disturbed natural systems. Fire-return intervals and risks of catastrophic fire are consistent with the range of natural variability for the various forest communities. Stand structures and vegetative compositions are representative of more natural conditions.

3.25.22 Forest health, restoration, and fuels projects are completed in order to reduce fire risk to private lands and residences along the flanks of the HD Mountains, with an overall goal of improving forest health while, at the same time, maintaining and/or returning the area to a more natural forested condition.

3.25.23 Invasive plant species (including noxious weeds) are absent or rare in the HD Mountains area.

3.25.24 Management activities complement primitive recreation and roadless values.

3.25.25 Livestock grazing management complements roadless values and natural forest conditions.

3.25.26 Motorized travel occurs on designated roads and trails during appropriate times. Mineral development roads authorized by the Northern San Juan Basin FEIS/ROD are closed year-round to public motorized use (see the Northern San Juan Basin FEIS/ROD for travel management direction.)

3.25.27 Air quality impacts from management activities are reduced or avoided using BMPs and the best available technology.

Objectives

3.25.28 Every 5 years, unless otherwise determined by the Authorized Officer, complete elk and deer habitat enhancement project(s) (to be completed by operators conducting oil and gas activities in the HD Mountains area). The project(s) must enhance acreage in elk habitat or deer winter range in the HD Mountains area (preferably on state and/or SJNF-administered lands) in an amount that is equal to, or greater than, the acreage disturbed in elk habitat or deer winter range by oil and gas activities in the area.

3.25.29 Permanently close all roads that are not designated as open in the Travel Management Plan (roads not used by industry to access coalbed methane sites and not used for administrative purposes). Measures would be taken in order to effectively close such roads to all motorized use (including to full-size vehicles, ATVs, motorcycles, OHVs, and snowmobiles). Measures would include, but are not limited to, blocking roads at least one site distance up the roadbed by placing large boulders, livestock gates, and/or earthen barriers interspersed with tree trunks and branches or obliterating and recontouring areas back to the original slope.

3.25.30 Every 5 years, stabilize, rehabilitate, or restore 1 mile or more of gullied channels in order to reduce erosion and sediment delivery.

3.25.31 Annually, treat the full length of Crowbar Creek and Sauls Creek in order to control noxious weeds (primarily musk thistle [*Carduus nutans*]) with funds provided by the USFS and/or BLM and/or obtained through collection agreements/other funding instruments executed with oil and gas permittees.

3.25.32 Twice per year, treat Spring Creek, Salt Canyon and Fosset Gulch in order to control noxious weeds (primarily musk thistle) with funds provided by the USFS and/or BLM and/or obtained through collection agreements/other funding instruments executed with oil and gas permittees.

Table 3.25.1 shows the allowable, prohibited, and restricted management activities and uses for the HD Mountains MA 2.

Table 3.25.1: HD Mountains Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Allowable
Prescribed burning	Allowable
Mechanical fuels treatment	Restricted (treatments generally would not be allowable in the core roadless area)
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Restricted
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Restricted (to minimize impacts; should utilize existing corridors and disturbed areas where practicable)
Livestock grazing	Allowable
Facilities	Restricted (facilities would not be allowed within the roadless area and would generally be limited throughout the entire area)
Motorized (summer)	Restricted (summer motorized travel is suitable and may occur on designated routes; seasonal motorized restrictions may apply in order to protect resources and wildlife habitat areas)
Motorized (winter)	Prohibited
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Restricted (road development would be limited to lease contract obligations and for restoration management, as necessary)
Minerals - leasable (oil and gas, and other)	Restricted (NSO, CSU or TL stipulations may apply)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Prohibited

3.26 McPhee (San Juan National Forest)

The McPhee area includes the Anasazi National Register Archeological District and McPhee Dam (see Figure 3.27.2). With over 997 archeological sites, the Anasazi National Register Archeological District contains one of the densest concentrations of Ancestral Puebloan sites in the southwestern United States. These sites were identified and documented during the Dolores Archeological Project. In 1977, the district was established in recognition of this unique concentration of nationally significant cultural resources and landscapes. These sites are associated with Basketmaker III (A.D. 500–750), Pueblo I (A.D. 750–900), and Pueblo II (A.D. 900–1150) culture periods. Rising and falling water levels associated with management of McPhee Reservoir continue to impacts these sites causing erosion, loss of archaeological resources, and NAGPRA issues.

McPhee Dam was constructed on the Dolores River in order to provide storage for irrigation and municipal and industrial water in southwest Colorado. McPhee Reservoir also provides outstanding recreation opportunities for boating, fishing, hiking, and ATV use.

The McPhee area also includes the McPhee Reservoir Sauropod Locality. The sauropod is an important dinosaur fossil that will be protected and preserved as required by the PRPA. This significant fossil is currently being managed by the USFS in partnership with Colorado Mesa University. See Section 2.17 Paleontological Resources, for specific desired conditions for the McPhee Reservoir Sauropod Locality.

Under the direction of the LRMP, management of the McPhee area emphasizes protection and preservation of archeological and paleontological sites, while at the same time providing recreation opportunities and protecting big game winter range and sage-grouse habitat. Focused management will address the intensive recreational use of the area, as well as the ongoing impacts to significant archeological and paleontological resources. An integrated archeological, recreation, and interpretive plan should be developed. The existing archaeological monitoring plan will be implemented in order to improve management and to protect archeological resources in the area. A proactive management approach will take full advantage of the educational, interpretive, scientific, and research opportunities available within the area. These proactive approaches include interpretive trails, "Passport In Time" projects, campground programs, and "Archaeology Month" programs. In order to improve management, archeological testing will be conducted on sites that are 100% surface collected in order to determine if subsurface deposits exist. This information can be used to determine future management and uses of these sites. Archeological sites could also be assessed in the waterline in order to ascertain impacts associated with fluctuations in reservoir levels. Data recovery will be conducted, if necessary, in order to mitigate adverse impacts.

Desired Conditions

3.26.1 McPhee offers diverse recreation for communities while, at the same time, preserving archeological and paleontological resources.

3.26.2 McPhee provides big game winter range and sharp-tailed (*Tympanuchus phasianellus*) and sage-grouse habitat.

3.26.3 Vegetation is managed in order to protect and enhance cultural and paleontological resources.

3.26.4 Interpretive and educational opportunities enhance visitor experience and increase stewardship of sites.

3.26.5 User-made trails are rerouted or eliminated in order to avoid impacts to archeological and paleontological sites.

3.26.6 Hazardous fuels are managed in order to protect and preserve archeological resources, and to reduce the risk of wildfire to recreational facilities.

3.26.7 Cultural viewsheds are preserved; incompatible uses or developments are prevented.

3.26.8 The SJNF partners with the Bureau of Reclamation to address impacts to archaeological resources and NAGPRA issues.

3.26.9 The SJNF partners with research organizations to test archaeological sites and conduct data recovery if sites are being impacted.

Objectives

3.26.10 Within 5 years, implement site-steward and "adopt-a-site" programs.

3.26.11 Over the implementation life of the LRMP, develop two interpretive trails.

3.26.12 Within 10 years, test two sites for subsurface archeological deposits.

3.26.13 Within 5 years, implement archaeological monitoring plan.

3.26.14 Within 3 years, reroute or close user-made trails that are impacting archaeological resources

Table 3.26.1 shows the allowable, prohibited, and restricted management activities and uses for the McPhee.

Table 3.26.1: McPhee Allowable Uses

Management Activities and Uses	Allowable - Prohibited - Restricted
Fire managed for resource benefit	Restricted in order to protect significant archaeological resources
Prescribed burning	Restricted
Mechanical fuels treatment	Allowable
Timber production (scheduled on a rotation basis)	Restricted
Timber harvesting as a tool	Restricted (significant archaeological resources must be protected)
Commercial use of special forest products and firewood	Prohibited
Land use ROWs, special use permits, and utility corridors	Restricted (to minimize impacts to archaeological resources; utilize existing corridors where practicable)
Livestock grazing	Allowable
Facilities	Restricted to existing facilities (significant archaeological resources must be protected prior to the development of any new facilities)
Motorized (summer)	Restricted to designated routes
Motorized (winter)	Restricted
Non-motorized (summer and winter)	Restricted
Mechanical transport	Restricted to designated roads and trails
Road construction (permanent or temporary)	Restricted
Minerals - leasable (oil and gas, and other)	Administratively not available
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Restricted

3.27 Rico (San Juan National Forest)

The Rico "special area" includes the USFS-administered lands adjacent to the town of Rico. Approximate boundaries include Telescope Mountain to the northeast, Spruce Gulch to the southeast, Burnett Creek to the southwest, and Horse Creek to the northwest. The Rico area is located in a subalpine region of the San Juan Mountains, with elevations ranging from 8,800 feet in town to 12,681 feet on nearby Blackhawk Mountain. The area's climate is best described as having four distinct seasons with significant winter snows, as well as the associated springtime runoffs. The large volumes of water from the winter snowmelt support a vast conifer and aspen forest with interspersed meadows. The high altitude and southerly latitude of the Rico area offer diverse and sometimes extreme climatic conditions that can range from warm and pleasant sunny days in the middle of January to harsh snowstorms in the summer months. Due to the high altitude, significant temperature drops usually occur at night. Snowstorm events can be substantial, and it is not unusual for roads to be closed, power to be disrupted, and/or emergency services to be delayed.

The Rico area is located primarily on the east side of the Dolores River (which is fed by several tributaries). The headwaters of these tributaries begin in the cirques and basins formed by the numerous surrounding mountain peaks. The majority of these peaks (including Expectation, Dolores, and Telescope) have elevations of over 12,000 feet. The area supports an array of big game wildlife (including deer, elk, sheep, mountain lion [*Puma concolor*], and black bear [*Ursus americanus*]). Elk and deer are primary resources. Small game is also plentiful (including blue grouse [*Dendragapus obscurus*] and snowshoe hare). The Dolores River, Silver Creek, and many other local tributaries, support a diverse plant and wildlife ecosystem. Canada lynx have recently been reintroduced into the SJNF and are often seen in the area.

The historic mining industry in the Rico area has provided a rich cultural history and is the reason the town was founded; however, it has also left behind a legacy of environmental damage. Impacts are primarily from previous mining activities (including mill tailings, mine dumps, shafts and tunnels, water quality degradation, and lead contamination to some of the area's soils). Hundreds of active unpatented mining claims continue to surround the Rico area.

The town of Rico is relatively remote. The nearest towns to the north are Telluride and Mountain Village (which are approximately 28 miles away, over Lizard Head Pass). The nearest towns to the south are Dolores (approximately 40 miles away) and Cortez (approximately 50 miles away).

Rico is a community that aims to preserve its small mountain town historic character, even as the population grows. The community uses the natural resources of the surrounding public lands in order to assist in building a new post-mining economy. The relatively undeveloped, non-resort character of Rico is rapidly becoming rare in Colorado (as it is in other western states). Preserving the feel and appearance of the historic compact "mountain town" land pattern of the existing town is extremely important to the residents and property owners of Rico. New development areas beyond the historic town plat will complement the existing town site by focusing development adjacent to town on the north and south sides while, at the same time, preserving natural forest areas to the east and west of town. Management of population growth, new development, and overall rate of growth are essential to preserving the unique character and relationship between the USFS/BLM and the Rico community (USFS and Town of Rico, Colorado 2011).

Under the direction of the LRMP, focused management of this area will address the impacts that occur in tandem with private land development and the maintenance of the interconnected SJNF resources. A sustainable management approach that maintains the close relationship between the people of Rico and the landscape of public lands will allow these goals to be met.

The Rico special area would offer an opportunity for the SJNF to work collaboratively with the people of Rico in order to develop sustainable management practices for the planning area. SJNF managers will develop an MOU for projects in the Rico area in order to outline common goals and achieve sustainable management approaches throughout the implementation life of the LRMP.

Desired Conditions

3.27.1 Management of SJNF-administered lands contributes to or enhances the historic "mountain town"' scale and appearance of the Rico.

3.27.2 Trailheads and informational signage direct locals and visitors to the appropriate desired recreational experience.

3.27.3 Land ownership patterns are improved and consolidated between the town, private landowners, and the SJNF in order to enhance community development objectives and to reduce resource impacts (including to the viewshed on the surrounding public lands).

3.27.4 Trails accessing SJNF-administered lands from within town boundaries emphasize non-motorized recreation modes in order to emphasize the community's quiet-use character.

3.27.5 Restoration and preservation of the natural space, beauty, and terrain of the area is recognized as the principal resource asset to the town.

3.27.6 Undeveloped areas and CRAs on SJNF-administered lands near and/or around Rico provide quality elk and other large game habitat and wildlife corridors. These areas also provide quality hunting and wildlife viewing, as well as pristine backcountry non-motorized recreational experiences.

3.27.7 Undeveloped and roadless areas on SJNF-administered lands near and/or around Rico continue to provide habitat for wildlife and contribute to the sustainable reintroduction of the Canada lynx.

3.27.8 Select historic structures associated with the area's past mining history are stabilized, protected, and interpreted.

3.27.9 Area residents, as well as the visiting public, are directed to appropriate areas for non-motorized and motorized recreation opportunities through a variety of informational, educational, and interpretational venues.

3.27.10 Instream flows on the upper Dolores River above McPhee Reservoir are maintained in order to enhance and preserve the scenic quality of the Dolores River (and the surrounding watershed) and protect fisheries, riparian, and aquatic habitat.

3.27.11 The watersheds surrounding Rico are maintained and enhanced, with a focus on water quality improvement for perennial streams entering the Dolores River.

3.27.12 Water quality entering the Dolores River is improved due to collaborative remediation efforts to clean up mining-impacted lands in the Rico area.

3.27.13 The Silver Creek watershed remains the municipal water source for the town of Rico until such time as additional and/or new water sources are developed. Rico's municipal water supply source is protected from development activities that would cause negative impacts, per the town's permitting process and in coordination with the SJNF.

Objectives

3.27.14 Emphasize a proactive working relationship between the town of Rico and the SJNF that serves to preserve and protect the uniqueness of the Rico community. Annual meetings between the town and the SJNF will be encouraged in order to review community and public land management objectives specific to the public lands within the Rico MA 2 area.

3.27.15 Within 5 years, develop a parking lot outside the town limits for the Burnett Trailhead in order to provide an adequate staging area for motorized recreational experiences, along with preserving the quiet of the community while, at the same time, providing motorized opportunities.

3.27.16 Annually, sign a minimum of one trail within the Rico area in order to inform and direct appropriate recreation use.

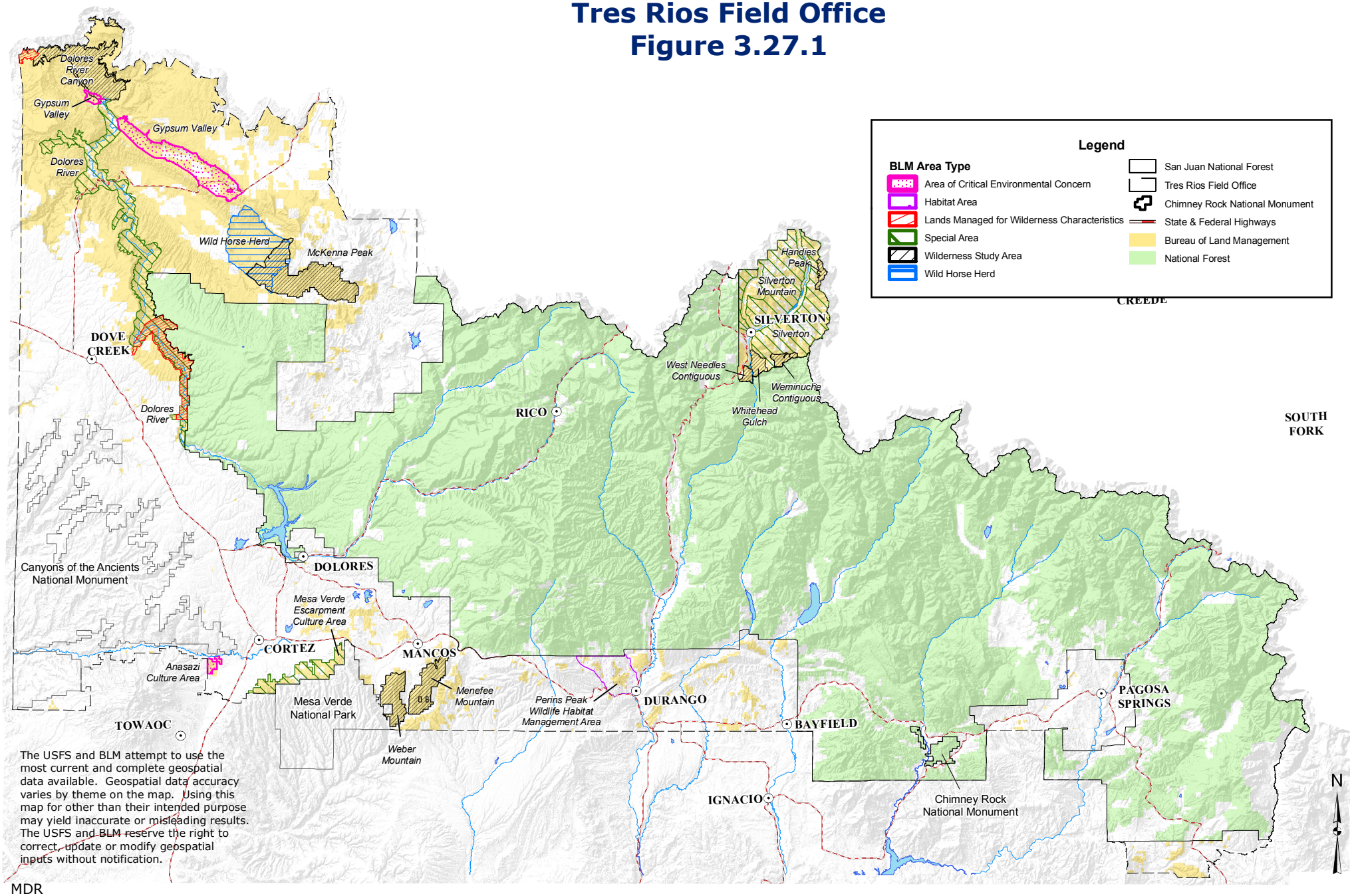
Suitability

Table 3.27.1 shows the allowable, prohibited, and restricted management activities and uses for the Rico area.

Table 3.27.1: Rico Area Allowable Uses

Management Activities and Uses	Allowable - Restricted - Prohibited
Fire managed for resource benefit	Allowable
Prescribed burning	Restricted to mitigating natural disturbances (including insect or disease epidemics) and preventing adverse impacts to the surrounding viewshed, watershed, and overall land health
Mechanical fuels treatment	Restricted to mitigating natural disturbances (including insect or disease epidemics) and preventing adverse impacts to the surrounding viewshed, watershed, and overall land health
Timber production (scheduled on a rotation basis)	Prohibited
Timber harvesting as a tool	Allowable
Commercial use of special forest products and firewood	Allowable
Land use ROWs, special use permits, and utility corridors	Allowable
Livestock grazing	Allowable
Facilities	Restricted (facilities such as parking areas, staging areas, and adequate signage, are generally suitable to direct and inform recreation activities)
Motorized (summer)	Restricted to motorized routes and trails designated within the Rico area
Motorized (winter)	Restricted to motorized areas designated within the Rico area
Non-motorized (summer and winter)	Allowable
Mechanical transport	Allowable
Road construction (permanent or temporary)	Restricted (permitted in order to provide access to valid existing rights, including mining claims; temporary construction may occur in some areas in order to achieve resource restoration objectives)
Minerals - leasable (oil and gas, and other)	Restricted (an NSO stipulation would be applied to CRAs within the Rico area; CSU and TL stipulations may be applied to specific locations, as necessary, in order to mitigate resource impacts)
Minerals - locatable	Allowable (open to mineral entry per the 1872 Mining Law; however, the exploration and development of mining claims may be subject to restrictions to protect resources)
Minerals - saleable (materials)	Restricted (limited road access and other constraints in the Rico area may limit or preclude mineral development)

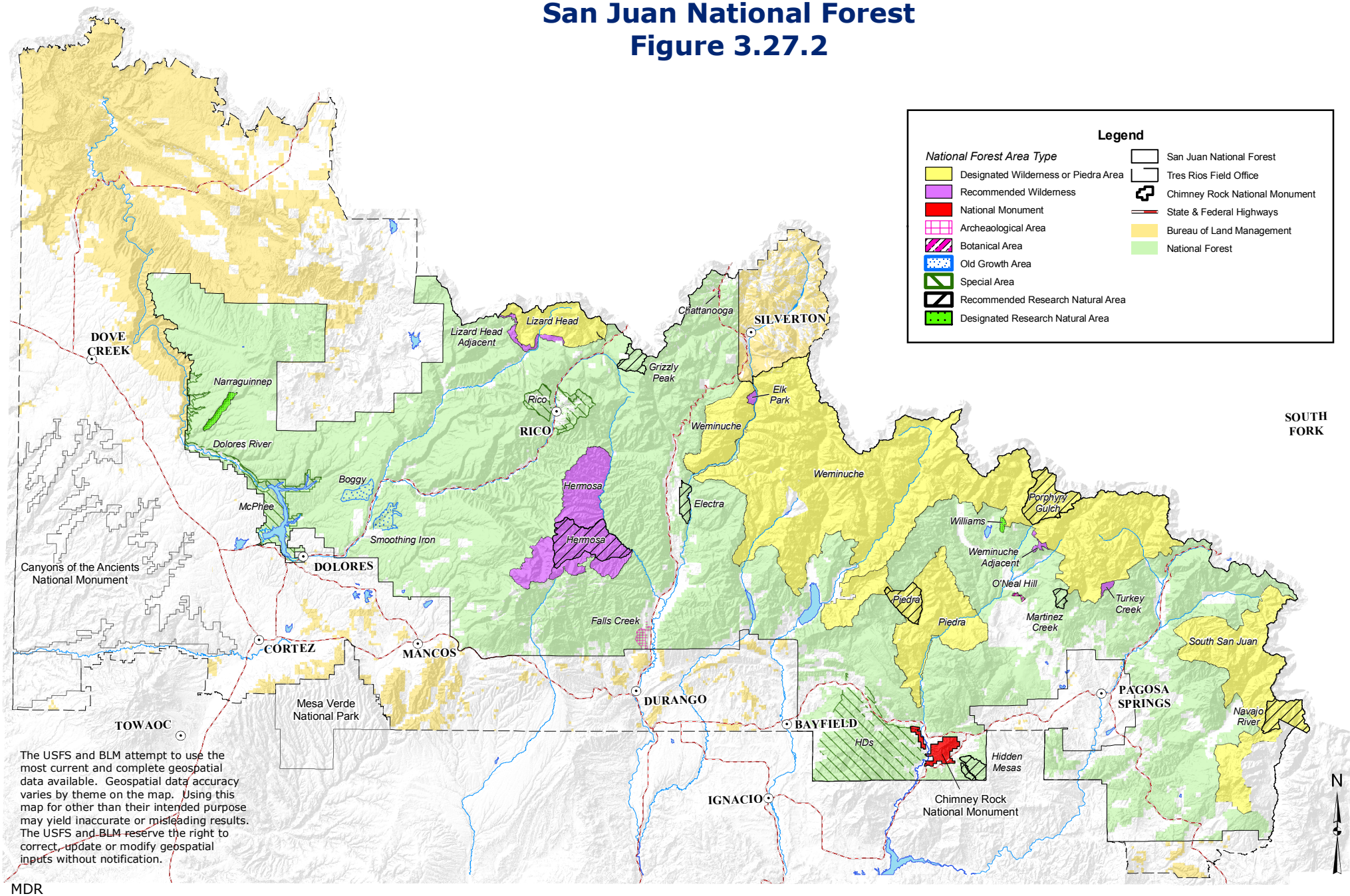
Special Areas and Designations
Tres Rios Field Office
Figure 3.27.1



The USFS and BLM attempt to use the most current and complete geospatial data available. Geospatial data accuracy varies by theme on the map. Using this map for other than their intended purpose may yield inaccurate or misleading results. The USFS and BLM reserve the right to correct, update or modify geospatial inputs without notification.

MDR
NAD 83, Polyconic Projection
August 20, 2013

Special Areas and Designations
San Juan National Forest
Figure 3.27.2



MDR
NAD 83, Polyconic Projection
August 19, 2013

0 10 20 40 Miles

San Juan National Forest and Tres Rios Field Office
Land and Resource Management Plan

CHAPTER 4 – MONITORING PLANS

4.1 San Juan National Forest Monitoring Plan

4.1.1 Introduction

The National Forest Management Act requires "continuous monitoring and assessment in the field" to establish the basis for "evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land" (16 USC 1604(g)(3)(C)). The monitoring plan for this LRMP provides a framework for the adaptive management process alluded to in the NFMA by establishing priorities and timelines for the evaluation of ecological, social, and economic conditions and trends that contribute to sustainability and reflect progress towards the land management goals for the SJNF. Effective monitoring and evaluation fosters improved management and more informed planning decisions. It helps identify the need to adjust desired conditions, objectives, standards, and guidelines as conditions change. Monitoring and evaluation help the SJNF and the public determine how the LRMP is being implemented, whether LRMP implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid.

Monitoring requires addressing key ecological, social, and economic measures. Selection of those measures is based upon relevancy to the following questions established within the NFMA:

1. Monitoring to determine whether LRMP implementation is achieving multiple use objectives;
2. Monitoring to determine the effects of the various resource management activities within the planning area on the productivity of the land;
3. Monitoring of the degree to which on-the-ground management is maintaining or making progress towards the desired conditions for the LRMP;
4. Adjustments of the monitoring program or LRMP content as appropriate to account for unanticipated changes in conditions, new information, or new policy.

These four questions are investigated using one or more of the following monitoring strategies:

- **Effectiveness Monitoring:** Determines whether or not implementing the direction and desired conditions in the LRMP is effective at achieving the related goals and objectives.
- **Implementation Monitoring:** Determines whether or not projects were implemented according to LRMP direction (standards and guidelines).
- **Validation Monitoring:** Verifies whether or not assumptions and models used in LRMP implementation are appropriate and determines whether or not implementing the direction and desired conditions in the LRMP is effective at achieving the goals and objectives.

4.1.2 Monitoring Process

LRMP monitoring follows the following process: establish monitoring priorities, identify sources of information and partners, collect and evaluate the data, and report results of the evaluation including needed changes to the LRMP.

Step 1—Establish Monitoring Priorities: With finite resources (budget and personnel) it is not possible to address all of the questions related to management issues or programs. This monitoring plan describes priorities related to collecting, managing, and evaluating data. Priorities for monitoring are established using the following criteria:

- monitoring item is required by law, regulation, or policy;
- ecological significance (a measure of the potential risk to natural resources if the monitoring is not completed; this includes the potential for long-term or irreversible damage and the geographic extent of the potential effects);
- level of scientific controversy surrounding the issue;
- level of public controversy or concern surrounding the issue;
- likelihood of achieving desired conditions;

- data needs identified from previous monitoring activities;
- assessment of benefits versus the cost of collecting data; and
- emerging issues and concerns that may be addressed through monitoring.

In addition to these criteria, the Nature Conservancy facilitated sessions with USFS and BLM personnel to develop a prioritized menu of indicators for monitoring the integrity of key ecological features on BLM and NFS lands in southwest Colorado (Oliver et al. These sessions resulted in a framework that has been used to prioritize portions of this monitoring plan.

Step 2—Identify Sources of Information and Partners: The USFS has a number of databases and geospatial depositories that are updated annually and used to report accomplishments, depict resource conditions at a single point in time, or to display trends in resource conditions. These databases must be identified comprehensively before monitoring begins and used as tools to facilitate monitoring and reduce redundancy.

It is also essential that partners and potential cooperators that have relevant information, or that should be involved with developing monitoring protocols and actions, are identified. These partners could include state, tribal, or local agencies (especially if they share responsibility for a resource such as non-native invasive weeds or water management); organizations with shared interests in the monitoring outcome; universities, colleges, or secondary schools; the research branch of the USFS; and many others.

The SJNF will hold monitoring and evaluation meetings at least once every 2 years with partners and other interested stakeholders from the general public, organizations, or local governments. The meetings will be open to the public and community members will be encouraged to help SJNF personnel in monitoring LRMP implementation, evaluating ecological, social, and economic impacts, and identifying amendment needs and proposed solutions.

Step 3—Collect and Evaluate the Data: Resource managers will evaluate the data collected, with the goal of answering the four monitoring questions listed above. Evaluation is the ongoing process of translating data into a continuing stream of useful information to assess the status of conditions relative to those specified in the LRMP and to recognize when modifications or course corrections are called for in desired conditions, other LMRP direction, or the monitoring program itself. The LRMP's desired conditions, indicators, and the evaluation process are all tightly linked into continuous loops to feed the adaptive planning model.

There are four components that contribute to effective evaluation:

- **Evaluation Context:** a sense of the history of the place or the circumstances (temporal and special context).
- **Evaluation Baseline and Reference Information:** describes the change from a baseline or reference condition, either toward or away from a desired condition. The desired condition may, or may not, be fully achieved; however, it is important to know if management activities are proceeding in the desired direction.
- **Evaluation Information Used to Infer Outcomes and Trends:** conclusions will be drawn from an interpretation of monitoring information.
- **Evaluation Results Documented in a Biennial Monitoring and Evaluation Report:** the SJNF will publish a biennial monitoring report to share information and initiate changes in management activities.

Step 4—Publish the Biennial Monitoring Report: The SJNF will publish and distribute a biennial monitoring report. The report will summarize the information collected, list potential future research needs, and will be used to inform adaptive management for the SJNF. The report will indicate whether or not a change to the LRMP, management activities, the monitoring program, or a new plan assessment may be warranted based on new information. The biennial report will be based on data and information gathered the previous two fiscal years. Contents may include some or all of the following:

- monitoring and evaluation accomplishments;
- select information used to describe ecological conditions;
- interpretations of data and conclusions which may include recommendations for changes to the LRMP, or management actions; and
- relevant information about the management of the public lands within the planning area including outputs, services, and accomplishments.

4.1.3 Management Indicator Species Monitoring

MIS are identified and monitored to assess the effects of selected management activities on their populations and on the habitats with which they are associated. Changes in MIS populations or their habitat could indicate that current management is adversely affecting the composition, structure, or function of those habitats, and could result in the need for a plan amendment or other types of adaptive management. The SJNF will monitor the status and trend of MIS populations and the condition and trend of their habitats at the scale most appropriate for the MIS population of concern.

4.1.4 Viability Monitoring

This LRMP is being developed under the provisions of the 1982 USFS Planning Regulations at 36 CFR 219.19 as allowed by the transition provision of the 2000 regulations (36 CFR 219.35, revised 2004; the 2012 forest planning regulations currently in effect allow use of the previous regulations for plan revisions initiated before the 2012 regulations took effect [36 CFR 219.17 (b) (3), 2012]). Pursuant to the provisions of the 1982 USFS Planning Regulations, the SJNF shall manage fish and wildlife habitat to maintain viable populations of existing native and desired non-native vertebrate species. Agency actions must not result in loss of population viability or create significant trends toward federal listing (FSM 2670.32). Based on these requirements, species viability is a fundamental underpinning of the ecological framework and sustainable ecosystems strategy employed in the LRMP to conserve habitats and species, and is therefore an important focus of this monitoring plan. The SJNF will use the best available information to determine long-term trends for habitats, populations, and identified species. As appropriate, habitat and/or population data from a variety of sources would be used to determine population trends. Should downward trends be identified, further investigations would be conducted in an effort to determine the cause of such trends. Causes that are tied to agency actions would be addressed through adaptive management actions.

4.1.5 Broad-scale Monitoring Strategy

This monitoring plan represents one component of a more comprehensive monitoring strategy that will apply to a larger geographic scale than just the SJNF. The broader strategy will ensure that each level of monitoring is complementary and efficient, and that information is gathered at scales appropriate to the monitoring questions. A fully integrated monitoring program will be designed to provide managers with an information stream essential to understanding the effects and effectiveness of management direction in achieving agency and LRMP goals and objectives, and to permit continuous evaluation of the LRMP itself to ensure that it remains responsive to changing conditions and new information.

4.1.6 Components of the Monitoring Plan

The monitoring plan presented in the tables below contains seven components that link monitoring efforts directly to the plan components presented in this LRMP, and guide monitoring activity for each element of the plan. These components are focused around selected desired conditions and are designed to test relevant assumptions, track relevant changes, and measure management effectiveness and progress towards achieving or maintaining the LRMP's desired conditions.

1. **Desired Condition:** The desired conditions are selected from Chapters 2 and 3 of the LRMP and serve as the basis for the monitoring plan. These are the "drivers" of the monitoring plan and provide the "questions" that this monitoring plan seeks to answer.

2. **Objective:** The objectives are projections of measureable and time-specific outcomes or accomplishments that, if achieved, would contribute to maintaining or reaching desired conditions during the life of the LRMP. They relate directly to the desired conditions and are also selected from Chapters 2 and 3 of the LRMP.
3. **Priority:** High priority (H) items have been identified by resource specialists as essential for assessing trends in ecosystem health. Monitoring elements required by law and/or by regulation are also ranked as high priority. It is expected that annual budgets would normally allow most of these high priority items to be funded. Medium priority (M) indicates that the monitoring element is directed by the LRMP (which may or may not be directly associated with required laws or regulations), as developed in Chapters 2 and 3, but would be contingent upon available funding after high priority monitoring has been funded. Low priority (L) indicates that the monitoring element involves questions of a more indirect nature, or that it does not fall under one of the above classifications. Typically these monitoring elements occur rarely unless funding and personnel are available. In general, high-priority items will have higher precision and reliability, and medium- and low-priority items will have low precision and reliability.
4. **Performance Measures and Indicators:** This column identifies USFS performance measures or other indicators that will be used to gauge or track accomplishments that lead the SJNF toward meeting objectives and desired conditions. These indicators provide a measureable quantitative or qualitative parameter.
5. **Scale:** Scale describes the level of analysis with respect to land size or level of application. This measure is important in describing impacts dealing with habitat heterogeneity and population viability issues, as well as describing cumulative impacts related to, or resulting from, management actions.
6. **Frequency of Reporting:** Frequency of reporting describes the timing of monitoring and evaluation efforts. Much data are collected annually, while other data are collected at longer or shorter intervals based on the length of time needed to discern a measureable change.
7. **Sources and Partners:** Potential data sources for information and partners that may be involved in providing input into the monitoring process or identifying areas where research may be needed.

Table 4.1.1: Terrestrial Ecosystems

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.2.35 Soil productivity is maintained at site potential, or is trending towards site potential. **2.2.36** Long-term levels of soil organic matter and soil nutrients (including soil carbon) are maintained at sustainable levels. **2.2.38** Management-induced soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils are rare on terrestrial ecosystems of the SJNF lands. **2.2.39** Upland soils exhibit infiltration and permeability rates that minimize surface run-off and allow for the accumulation of the soil moisture necessary for plant growth and ecosystem function.	**2.2.45** Within 10 years, restore or improve soil productivity and soil carbon on at least 20 miles of routes that will be closed or decommissioned on the SJNF. **2.2.59** Within 5 years, utilize locally produced biochar to sequester carbon, to reduce erosion, and to enhance soil productivity and water retention on a minimum of 0.5 acre per year on the SJNF.	H	Soil penetrometer readings (before and after treatment), soil chemistry, and soil carbon results and comparisons with baseline values Acres treated	SJNF—forest wide Soil chemistry and soil carbon on five sites every 5 years Project	Every 10 years	Project monitoring
2.2.13 The abundance and distribution of Arizona fescue in ponderosa pine forest and in Arizona fescue mountain grasslands are maintained or increased.	**2.2.46** Within 10 years, increase the canopy cover of Arizona fescue by at least 10% in two Arizona fescue mountain grassland sites on the SJNF that currently classify as Kentucky bluegrass mountain grasslands by using mechanical treatments, prescribed fire, and/or seeding. **2.2.55** Within 10 years, increase the cover of Arizona fescue by at least 20% within two ponderosa pine stands on the SJNF by using mechanical treatments, prescribed fire, and/or seeding.	L	Acres treated	Project	Every 5 years	Forest Service Activity Tracking System (FACTS), grazing allotment monitoring

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.2.1 The composition, structure, and function of terrestrial ecosystems are influenced by natural ecological processes, including disturbance events such as fire, infestations by insects or disease, winds, and flooding. **2.2.6** All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.	**2.2.47** Within 10 years, inventory and map stand structure changes that have resulted from spruce beetle mortality and wildfire.	M	Pre– and post–spruce beetle outbreak acres, *and* wildfire areas, by development stage; changes in acres	SJNF -- forest wide	Every 5 years	Aerial photo series and field sampling, FSVeg database
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1. **2.9.2** SJNF lands classified as "suitable" for timber production have a regularly scheduled timber harvesting program.	**2.2.48** Within 15 years, on suitable timber lands of the SJNF, reforest 15% of spruce-fir forests that have extensive mortality of overstory spruce that do not have appropriate forest cover and will not reforest within 15 years.	H	Area reforested in comparison to acres not meeting forest cover standards; acres	SJNF -- forest wide	Every 5 years	Aerial photo series and field sampling, planting survival surveys, stocking surveys; FACTS
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.	**2.2.49** Within 15 years, increase the young development stage of cool-moist mixed conifer forests on the SJNF from 0.5% to 15% by using prescribed fire and mechanical treatments (e.g., timber harvest) in the mature cool-moist mixed conifer forests.	L	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.	**2.2.50** Within 15 years, increase the young development stage of aspen forests on the SJNF to 25% by clear cutting and/or conducting prescribed fire in mature aspen stands, and mixed conifer stands with an aspen component.	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.	**2.2.52** Within 15 years, increase the percent of ponderosa pine forests in the young development stage from zero to 3% on SJNF by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1. **2.2.10** Forested terrestrial ecosystems display a Fire Regime Condition Class of 1.	**2.2.53** Within 15 years, increase the percent of warm-dry mixed conifer forests in the young development stage from zero to 3% on SJNF lands by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1. **2.2.10** Forested terrestrial ecosystems display a Fire Regime Condition Class of 1.	**2.2.54** Within 15 years, improve the composition, structure, and function of 25,000 acres of ponderosa pine forests by using low-intensity fire.	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased. **2.2.17** Local seeds of desirable native plant species are available for revegetation and restoration efforts.	**2.2.57** Over the next 15 years, secure a reliable source of local seed stock for eight or more native grass, forb, and shrub species (including Arizona fescue), to be used for revegetation and restoration after disturbance. **2.2.62** Over the next 15 years, revegetate and reclaim 5 acres on SJNF using native early-successional plant species developed from local plant sources to accelerate restoration success. **2.8.61** Over the next 15 years, broaden tree seed collection activities on the SJNF to include non-commercial species and additional species-specific elevation zones to improve genetic diversity and the resilience of forested ecosystems.	L	Acres of local seed stock harvested by species, number of species successfully harvested	SJNF – forest wide	5 years	Contractors Cooperators

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased. **2.2.18** Suitable habitats for species vulnerable to climate change exist and serve as seed sources for revegetation and restoration efforts.	**2.2.58** Over the life of the plan, collect seed from 10 local vulnerable grass, forb, and shrub species, including some alpine species, for long-term storage to protect genetic sources. **2.8.61** Over the next 15 years, broaden tree seed collection activities on the SJNF to include non-commercial species and additional species-specific elevation zones to improve genetic diversity and the resilience of forested ecosystems. **2.2.64** Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine-dependent systems by removing non-climate stresses that result in adverse impacts to alpine ecosystems (e.g., unmanaged livestock grazing, unmanaged motorized recreation, etc.) from 100 acres on SJNF that are forb-dominated alpine habitat.	L	Numbers of species and pounds of viable seed collected Acres treated	SJNF – forest wide	10 years	Contractors Cooperators Grazing allotment and other project-level monitoring

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.2.9 Terrestrial ecosystems, including habitat for special status plant species, are productive, sustainable, and resilient, and provide goods and services over the long term. **2.2.41** Fens, wetlands, and hanging gardens have the water sources and hydrologic systems necessary to support and sustain the special status species associated with them. **2.2.42** Shale and gypsum soils have the characteristics necessary to support and sustain the special status species associated with them. **2.2.43** Soils that provide habitat for all special status species maintain the soil conditions necessary to support and sustain those species.	Monitor 50 known special status species locations and their habitats over 10 years.	M	Condition of special status species habitat; continued presence of special status species in these habitats	Site (areas occupied by special status species); monitor 20% of known special status species locations annually	Annually	USFWS, BLM CO Natural Heritage Program
2.2.44 Areas that are identified as critical habitat or proposed critical habitat for federally listed plant species have the characteristics necessary to provide for the growth and reproduction of the federally listed plant species for which they were designated.	**2.2.66** Projects or activities in habitat occupied by federally listed plant species, or in designated critical habitat, must be designed and conducted in a manner which preserves the primary constituent elements needed to sustain the life history processes of those federally listed plant species.	H	In occupied critical habitat for Pagosa skyrocket, the indicator is the continued presence of the species. In unoccupied critical habitat for Pagosa skyrocket, the indicators are the presence of suitable plant communities, habitat for pollinators, and appropriate disturbance regimes.	Site (Critical Habitat Unit)	Annually in occupied critical habitat, and once every 5 years in unoccupied critical habitat	USFWS, BLM CO Natural Heritage Program
2.2.7 Old growth ponderosa pine, old growth pinyon-juniper and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on SJNF.	Over the next 15 years, continue to update the old-growth data base and expand the data collection to include old-growth pinyon-juniper stands.	M	Increase in the number of acres surveyed for old growth	SJNF – forest wide	5 years	FSVeg database

Table 4.1.2: Terrestrial Wildlife

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.3.1 Wildlife populations are viable on NFS lands. Wildlife populations are self-sustaining, connected, and genetically diverse across SJNF lands.	Monitor habitat condition trends for terrestrial wildlife. Monitor MIS population trends.	H	Trends in vegetation, habitat structure, and MIS population trends	Varying scales	Every 10 years	Data sources and partners may include, but are not limited to: CPW, TNC, Forest Inventory and Analysis program (FIA), National Resource Information System (NRIS), (including Wildlife, FSVeg, and Terra databases), Colorado Bird Observatory, informed judgment by USFS ecologists and wildlife/fisheries biologists, varied existing monitoring sources, habitat inventory assessments, resource information system databases, program reviews, activity reviews, annual program reporting, and species and habitat assessments.
2.3.2 Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance which do not reduce habitat effectiveness.	Maintaining habitats capable of supporting State population objectives.	H	Density of unmitigated roads and motorized trails within identified CPW winter range and production polygons	Winter range and production area polygons as mapped by CPW for SJNF.	10 years	Planning area geographic information system (GIS) database.

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
Wildlife Species: **2.3.12** Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation. **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	Maintain or improve habitat conditions for terrestrial wildlife species. **2.3.24** Treat 2,000 or more acres of vegetation (TRFO lands) and 2,000 or more acres of vegetation (SJNF lands) over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area. **2.3.27** Nokomis fritillary butterfly: Over the life of the Plan, restore the hydrologic conditions and plant communities during project implementation at springs or seeps capable of supporting Nokomis fritillary while, at the same time, retaining the water development for livestock or other uses. **2.3.28** Bats: Over the life of the plan, all mine closures for human safety at sites supporting bat populations include structures (such as bat gates) designed to provide for continued use as bat habitat. **2.3.31** MIS—Abert's squirrel: Over the life of the Plan, restore approximately 3,000 acres of ponderosa pine forest to improve habitat quality as defined in the SJNF Forest Service Abert's Squirrel Species Assessment (SJNF only).	H	Number of acres of habitat improvement completed	SJNF	5 years	Unit reporting; Wildlife, Fish, and Rare Plants information system (WFRP); FACTS; FSVeg database

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
	2.3.32 MIS—American marten: Over the life of the Plan, treat approximately 2,000 acres of spruce-fir and cool-moist mixed-conifer forests to increase age class diversity and provide future foraging, breeding, and dispersal habitat as defined in the SJNF Forest Service American Marten Species Assessment (SJNF only). **2.3.33** MIS—Elk: Over the life of the Plan, improve approximately 5,000 acres of winter range through mechanical and prescribed burn treatments as defined in the SJNF Forest Service Elk Species Assessment (SJNF only). **2.3.34** MIS—Hairy woodpecker: Over the life of the Plan, harvest and regenerate approximately 3,000 acres of aspen forest to increase age class diversity and provide future mature aspen nesting habitat as defined in the SJNF Forest Service Hairy Woodpecker Species Assessment (SJNF only).					
Members of the public, stakeholders, and other interested parties are informed on natural resource management practices and their role in maintaining habitat for wildlife.	**2.3.25** The USFS will annually conduct a minimum of six wildlife interpretive and environmental education programs to inform the public on natural resources management, wildlife species and their habitats, and encourage youth participation and interest in wildlife and natural resources.	M	Number of interpretive and environmental programs conducted	SJNF	Annually	SJNF staff and varied partners including, but not limited to, CPW, San Juan Mountains Association, and Mountain Studies Institute

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
Canada Lynx: **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	Planning and management actions for special status species.	H	Number of lynx screen uses for project analysis; reporting as required by Southern Rockies Lynx Amendment	SJNF	Annually	Unit reporting
Threatened, Endangered, and Protected Species: **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	Planning and management actions for special status species.	H	Number of requests to USFWS to initiate formal consultation or conferencing Number of informal consultation or conferencing submitted for written concurrence from USFWS. The number of conservation actions completed for listed species. Critical habitat designated in fiscal year. Number of threatened, endangered, and protected species occurring and trends (if known). Number of biological assessments completed.	SJNF	Annually	Unit reporting and WFRP
Sensitive Species: **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	Planning and management actions for special status species.	H	Number of biological evaluations completed	SJNF	Annually	Unit reporting and WFRP

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
Special status Species: **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	Planning and management actions for special status species.	H	Number of Recovery Plans, Recovery Strategies, Conservation Assessments, Conservation Strategies, or Conservation Agreements completed	SJNF	Annually	Unit reporting and WFRP
MIS occur as self-sustaining populations and are well distributed across the planning area in suitable habitat. **2.3.19** MIS are able to disperse freely across the planning area allowing for the interchange between populations and the maintenance of genetic diversity.	Monitor population trends as they relate to the management activity for the Plan scoping issue the MIS was selected for.	H	Population trends at the appropriate population scale	SJNF	10 years	Data sources may include but are not limited to: population estimates by State wildlife agencies (CPW), varied monitoring sources, informed judgment of USFS ecologists and wildlife/fisheries biologists, habitat inventory assessments, resource information system databases, program reviews, activity reviews, annual program reporting, and species and habitat assessments.

Table 4.1.3: Riparian and Wetland Ecosystems

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.4.1 Riparian and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare. **2.4.2** Riparian and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development. **2.4.3** Forest and shrubland riparian and wetland ecosystem types display hydrophytic trees and shrubs in a variety of size classes; they provide terrestrial and aquatic habitats, stream shading, woody channel debris, aesthetic values, and other ecosystem functions.	**2.4.13** Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites that currently classify as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%. **2.4.14** Within 10 years, determine the functional condition of 15 miles on SJNF of riparian and wetland ecosystems using the Proper Functioning Condition assessment method. **2.4.15** Within 15 years, treat two fens on SJNF lands with impaired functions.	M	Acres monitored; acres of proper functioning riparian and wetland ecosystems; acres monitored for invasive species	Site or reach	5 years	
2.4.4 Woody debris in a variety of sizes is present in forest and shrubland riparian and wetland ecosystem types. **2.4.9** Soil productivity is intact on all riparian and wetland ecosystems on the SJNF.	**2.4.13** Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on SJNF that currently classify as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.	L	Acres treated and monitored for effectiveness; acres meeting woody debris and soil productivity objectives	Site or reach	5 years	

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.4.12 Management-induced soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils are rare on all riparian and wetland ecosystems of the SJNF. Long term impacts to soils (e.g. soil erosion, soil compaction, soil displacement, puddling and/or severely burned soils) from management actions are rare on all riparian area and wetland ecosystems of the SJNF.	**2.4.14** Within 10 years, determine the functional condition of 15 miles on SJNF of riparian and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998).	H	Acres monitored for soil erosion or damage; BMPs implemented and effective; acres of soil erosion, compaction, displacement, puddling, or high burn severity	Site or reach--BMP monitoring is annual; burn monitoring only after a burn occurs	5 years	

Table 4.1.4: Aquatic Ecosystems and Fisheries

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.	Population inventories and trend/viability assessments for aquatic MIS.	H	MIS per mile or MIS per acre.	Stream reaches forest wide	5 years	CPW
2.5.5 An adequate range of stream flow provides for the long-term maintenance of physical habitat features. Channel features, including bank stability, width-to-depth ratio, pool/riffle ratio, pool depth, slope, sinuosity, cover, and substrate composition, are commensurate with those expected to occur under natural ranges of stream flow. **2.5.6** Water flow conditions in streams, lakes, springs, seeps, wetlands, fens, and aquifers support functioning habitats for a variety of aquatic and semi-aquatic species and communities.	**2.5.14** Annually, evaluate five streams on NFS lands for adequacy of instream flows sufficient to maintain population viability and otherwise achieve LRMP direction.	H	Number of regulated or flow-impacted streams evaluated for consistency with standard 2.5.18.	Stream reaches forest wide	Annually	Colorado Department of Water Resources, CPW

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.5.9 Aquatic systems are connected in a manner that avoids fragmentation of aquatic habitats and isolation of aquatic species. Connectivity between water bodies provides for all life history functions of aquatic species except where barriers are beneficial and necessary to achieve conservation goals for certain aquatic species.	**2.5.16** Over the life of the LRMP, connect at least 8 miles of fragmented stream habitat on SJNF lands to provide for aquatic species movement.	L	Number of road crossings or other features that may preclude fish passage.	Project	5 years	
2.5.4 Channel characteristics, water quality, flow regimens, and physical habitat features are diverse and appropriately reflect the climate, geology, and natural biota of the area.	**2.5.15** Annually, enhance or restore at least 3 miles of stream habitat on SJNF lands to maintain or restore the structure, composition, and function of physical habitat for USFS Sensitive Species, or USFS MIS species.	M	Number of structures and treatments. Effectiveness monitoring for existing habitat treatments to ensure proper function and identify maintenance needs.	Project	Every 5 years	

Table 4.1.5: Water Resources

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.6.1 State water quality standards and anti-degradation rules are met and State-classified water uses are supported for all water bodies **2.6.2** Water quality for impaired water bodies on the State's 303(d) list move toward fully supporting State-classified uses. **2.6.3** State "Outstanding Waters" within the planning area maintain the high levels of water quality necessary for this status. **2.6.5** Water from SJNF lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds (as defined in FSM 2542). Enhancement may be achieved by watershed restoration or by other activities.	**2.6.19** Every 5 years rehabilitate 10 or more acres to reduce erosion and sedimentation delivery to water bodies on both BLM and USFS lands. For USFS lands, do the work in priority watersheds, including those with water bodies listed for sediment impairment or that have TMDLs established for sediment. **2.6.20** Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).	H	Acres restored. TMDLs completed. BMPs implemented and effective.	Project or watershed—BMP monitoring annually	5 years	CDPHE, EPA
2.6.4 Watersheds within the planning area containing saline soils exhibit stable upland, riparian, and channel conditions that produce water quality as close as possible to reference conditions (as defined in FSH 2509.25); they produce the lowest possible saline contributions to the upper Colorado River (see Appendix I for saline watersheds). **2.6.17** All approved water developments that involve the use of the SJNF lands are permitted pursuant to applicable federal authorizations.	**2.6.20** Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).	M	Acres restored. BMPs implemented and effective.	Project	5 years	EPA

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.12.6 Management activities on the SJNF protect biological crust and control dust in order to minimize impacts of dust-on-snow events. **2.6.17** All approved water developments that involve the use of the SJNF lands are permitted pursuant to applicable federal authorizations.	**2.6.20** Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).	L	Acres restored. BMPs implemented and effective.	Project	5 years	
2.6.8 Historically disturbed and degraded stream channels recover through floodplain development, establishment of riparian vegetation with correct structure, composition, and function, and stable channel geomorphic characteristics.	**2.6.21** Over the life of the Plan, BMPs will be implemented to minimize management impacts to water quality on BLM and USFS lands. The effectiveness of BMPs will be improved if necessary through adaptive management. **2.6.22** Annually, treat approximately 20 acres or more in USFS Priority Watersheds in order to improve poor watershed conditions or maintain good watershed conditions. The goal is to move a watershed from an impacted condition class to a better condition class, or to maintain a good condition class.	M	Acres restored. Watersheds moved to better condition class. Miles of road decommissioned.	Watershed	Annual	EPA, CPW, BLM, National Park Service, private landowners
2.6.10 Potentially usable aquifers and water-bearing intervals possessing groundwater of quality and/or quantity that could provide multiple-use benefits, maintain water quality at natural conditions.	Maintain water quality at natural conditions.	M	Natural conditions (chemistry, quantity) maintained.	Project	5 years	Oil/Gas operators, water right holders

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.6.12 Upland areas function properly and do not contribute to stream-channel degradation. **2.6.13** The majority of undeveloped and unregulated or free-flowing streams within the planning area are retained in their current undeveloped condition; they provide potential reference conditions and offer unique opportunities for aquatic habitat, recreation, species conservation, and pleasing aesthetics. **2.6.14** The overall function and integrity of streams impacted by water developments are adequately protected for their baseline ecological and recreational values. This is accomplished by providing for adequate in-stream flows as part of water-development planning for existing or new water-development projects. This includes sustaining the ecological processes dependent upon flow within the impacted watersheds. **2.6.15** In unique cases where water is transferred from one catchment to another, water lost (i.e., there is no return flow) from watersheds as a result of water transfer does not adversely alter or impact the aquatic ecology of the watershed. Conversely, aquatic ecology and stability of the watersheds receiving imported water are not adversely impacted. **2.6.17** All approved water developments that involve the use of the SJNF are permitted pursuant to applicable federal authorizations.	**2.6.25** Over the implementation-life of the LRMP, all consumptive use water rights owned by the BLM and USFS are put to beneficial use and that use can be documented. **2.6.26** Based on review of monthly water court resumes, enter into any water court case necessary to protect BLM or USFS water rights and water-dependent resources.	M	Water quantity measurements. Area and percent of water bodies, or stream length, with significant change in physical, chemical, or biological properties from reference condition.	Watershed; project	10 years	

Table 4.1.6: Rangeland Management and Livestock Grazing

Desired Condition: Livestock Grazing	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.7.1 Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact.	Complete NEPA compliance on all active USFS allotments (as guided by the USFS Rescissions Act of 1995). Conduct periodic reviews of analyses and decisions in order to ensure that NEPA-based decisions stay current and sustainable for all permitted livestock grazing.	H	Numbers of grazing allotments with current NEPA decisions; total acres of public lands under term grazing permits	Planning area	Annually	Infrastructure database (INFRA)
	2.7.10 Within 15 years, working with partners and cooperators, reconstruct 10%–15% of priority structural range improvements in order to maintain infrastructure integrity.	M	Numbers/miles of range improvements constructed/reconstructed	Planning area	5 years	INFRA, grazing permittees
2.7.5 Rangelands provide diverse, healthy, and sustainable plant communities and conserve soil quality.	Annually, conduct prescribed monitoring activities on at least 10% of active allotments by priority. Ensure all allotments are adequately monitored on a rotating basis. Use monitoring information to make management changes using adaptive management principles.	H	Acres of long-term monitoring accomplished	Project level and/or planning area	Annually	Performance Attainment System (PAS), grazing permittees
	2.7.9 Annually administer at least 25% of active grazing allotments to standard on a priority basis ensuring that all active grazing allotments during the life of the plan receive appropriate administration. Work with grazing permittees and peers to resolve livestock grazing management issues. Take appropriate administrative action as needed to improve livestock grazing management.	H	Acres of rangeland administered to standard	Project level	Annually	INFRA, grazing permittees

Table 4.1.7: Invasive Species

Desired Condition: Invasive Species	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area, and are not influencing native populations or ecosystem function.	**2.8.6** Within 15 years, contain priority Class B invasive species identified in the Invasives Species Action Plan within the SJNF.	H	Acres of noxious weeds inventoried, treated, and monitored	Planning area	Annually	PAS, cooperators, contractors, FACTS
	2.8.7 Within 15 years, increase annual treated acres of noxious weeds to 10% of known acres infested.	M	Acres of noxious weeds inventoried, treated, and monitored		5 years	PAS, cooperators, contractors, FACTS
	2.8.8 Within 15 years, annual backcountry treatment (including Wilderness Areas and WSAs) is 10 to 15% of the total annual noxious weed treatment target.	M	Acres of noxious weeds inventoried, treated and monitored	Planning Area	5 years	PAS, cooperators, FACTS
	2.8.9 Over the life of the plan eradicate newly established invasive species especially Colorado Class A noxious species.	H	Acres/species of newly established Colorado Class A noxious weeds	Planning Area	Annually	PAS, cooperators, contractors, FACTS

Table 4.1.8: Timber and Other Forest Products

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.1 Forest vegetation management that results in meeting needs or demands for forest product offerings (commercial, personal, or other use) will be done in a manner that: maintains or improves ecosystem function, resilience, and sustainability;	**2.9.5a** Within 10 years, conduct thinning – with an emphasis on restoration, and fuels reduction, of altered forest types -- in the ponderosa pine and warm-dry mixed-conifer vegetation types on approximately 15,000 to 20,000 acres of SJNF lands.	M	Pre- and post-treatment inventory data; acres, forest products, and associated volumes (e.g., centum cubic feet (CCF), cords, green tons, teepee poles)	SJNF -- forest wide	Every 5 years	Databases of record (e.g., FACTS, Timber Information Manager (TIM); contractors, purchasers, permittees (commercial and personal-use)
	2.9.5b Within 10 years, emphasize selection harvests in cool-moist mixed-conifer and spruce-fir vegetation types on approximately 2,500 to 5,000 acres of SJNF lands.	M	Pre- and post-treatment inventory data; acres, forest products, and associated volumes	SJNF -- forest wide	Every 5 years	databases of record (e.g., FACTS, TIM); contractors, purchasers
	2.9.5c Within 10 years, utilize coppice harvest (clearcuts with regeneration by sprouting) in aspen and cool-moist mixed-conifer forest types on approximately 4,000 to 5,000 acres of SJNF lands.	M	pre- & post-treatment inventory data; acres, forest products & associated volumes	SJNF -- forest wide	Every 5 years	databases of record (e.g., FACTS, TIM); contractors, purchasers

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.1 Forest vegetation management supports, at least, the current level of economic activity in the local timber industry; provides economic or social support to local communities; ensures current and future needs for Native American tribal use, including that associated with special forest products (e.g., teepee poles)	**2.9.6** Meet or exceed average annual timber product offerings from SJNF lands, to local timber industries, publics, and other users (including Native Americans), as displayed in Tables 2.9.1 and 2.9.2 over the life of the LRMP.	H	Sales data for timber products; associated volumes (e.g., CCF), or numbers, for non-convertible products (e.g., Christmas trees)	SJNF – forest wide	Annually	TIM
2.9.1 Forest vegetation management…(continued) utilizes, to the fullest extent practicable, potential products including sawtimber, poles, topwood, or slash (like limbs, foliage)	**2.9.7** Every 3 years evaluate utilization of forest products from SJNF or TRFO contracts and permits that result in product sales or usage.	L	Volume sold and volume removed (scaled contract volumes), on-site utilization; CCF or green tons, site or contract inspection reports	Planning area	Every 3 years	cruise and scaling data from contracts, Pagosa Area Long Term Stewardship Contract, Contractor records; TIM
2.9.1 Forest vegetation management…(continued) efficiently balances or reduces costs of implementation of treatment activities	**2.9.8** Every 3 years compare, contrast, and evaluate costs of implementation of timber management projects.	M	Project costs and revenues; and other non-monetary measures	Planning area	Every 3 years	WorkPlan System; acquisition payments; Timber Sale Accounting
2.9.1 Forest vegetation management…(continued) anticipates climate-related plant succession changes (such as favoring heat- or drought-resistant tree species as leave trees, or in reforestation)	**2.9.9** Every 3 years review silvicultural prescriptions for incorporation of strategies that anticipate potential plant succession changes relative to warmer and/or drier forested conditions	L	Compare pre- and post-treatment silvicultural prescriptions; appropriate (scientifically based) silvicultural methods	Planning area	Every 3 years	Silvicultural prescriptions; reconnaissance data; post-treatment data
2.9.2 USFS lands classified as "suitable" for timber production have a regularly scheduled timber harvesting program **2.9.3** Forest Service lands classified as "not suitable" for regularly scheduled timber production (but where timber harvesting could occur for other multiple-use purposes) have an irregular, unscheduled timber harvesting program	**2.9.10** Every 10 years assess timber suitability for forested lands on the SJNF	H	Timber suitability categories and criteria; FSVeg polygons and associated acres, harvesting cost/revenue data	SJNF -- forest wide	Every 10 years	FSVeg database; Forest Vegetation Simulator and inventory data; timber management cost data

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.4 Reforestation activities on Forest Service/BLM lands use native tree species germinated from locally collected seed stock to improve the resiliency of forest ecosystems.	**2.9.11** Annually review seed inventories to ensure adequate seed from locally collected native tree species is available for planned reforestation activities on Forest Service/BLM lands.	H	Reviews completed, reforestation plans implemented; seed inventories and source information	Planning area	Annually	SJNF Tree Improvement Plan; FS Bessey Nursery seed inventory; other seed inventories and cooperating nurseries

Table 4.1.9: Fire and Fuels Management

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.11.1 Firefighter and public safety concerns are met for all fire management and fuel treatment projects.	**2.11.1** Firefighter and public safety concerns are met for all fire management and fuel treatment projects.	H	Measure of Lost Time Accidents	Planning area	Annually	Dispatch and partners including the BLM, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service
2.11.2 Wildfire behavior in the WUI (in and around developed areas and communities) does not result in damage to property, and protects public safety.	**2.11.10** Annually, for the next 10 years, complete an average of 7,000 acres of hazardous fuels reduction in the WUI.	M	Acres of fuel reduction by type	Planning area	Annually	Natural Resource Manager (NRM) database; FACTS database; National Fire Plan Operations and Reporting System (NFPORS), BLM
2.11.3 Wildland fire management maintains a balance between fire suppression and use of wildland fire (including both prescribed fire and natural ignitions) to regulate fuels and maintain forest ecosystems in desired conditions.	**2.11.12** The wildland fire response on both SJNF and TRFO lands will include evaluations for immediate suppression, management for resource benefit, or a combination of both actions to be taken.	H	Area and percent of forest affected by abiotic agents (e.g., fire, storm, land clearance) beyond reference conditions. Acres of wildland fire	Planning area	Annually	NRM database and partners including the BLM, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.11.4 Use of wildland fire and fuels reduction treatments creates vegetative conditions that reduce the threat to real property and infrastructure from wildfire.	**2.11.11** Annually, for the next 10 years, complete an average of 4,000 acres of fuels reduction and resource enhancement, utilizing Fire Managed for Resource Benefit on SJNF lands	H	Fire Regime Condition Class (FRCC) in ponderosa pine; dry mixed-conifer forests – USFS; mixed montane shrublands - USFS and BLM; pinyon - juniper woodlands - USFS and BLM.	Planning area	Annually (Activities Layer); 10 years (FRCC)	GIS analysis using FRCC maps and USFS Activities Layer to assess acreage restored. Compare FRCC maps over time to determine change and rate of change. Landscape, Fire and Resource Management Planning Tools (LANDFIRE) database.
2.11.5 The WUI will have defensible space and dispersed patterns of fuel conditions that favorably modify wildfire behavior and reduce the rate of wildfire spread in and around communities-at-risk.	**2.11.10** Annually, for the next 10 years, complete an average of 7,000 acres of hazardous fuels reduction in the WUI.	M	Acres of fuel reduction by type	Planning area	Annually	FACTS, NFPORS, records from cooperators
2.11.6 Major vegetation types reflect little or no departure from historic range of variation of fire frequency and intensity (e.g., reflect fire regime condition class 1).	**2.11.11** Annually, for the next 10 years, complete an average of 4,000 acres of fuels reduction and resource enhancement, utilizing fire managed for resource benefit.	M	FRCC in ponderosa pine; dry mixed conifer forests, mixed montane shrublands	Planning area	Annually, with 5- and -10-year analysis	FACTS, NFPORS, records from cooperators, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.11.7 Use planned and unplanned fire ignitions to increase resiliency and diversity across all forest and rangeland vegetation types. **2.11.8** Reintroduce fire to increase the resistance and resiliency of the warm dry mixed-conifer forest and ponderosa pine forest types in landscape such as Hermosa and Piedra areas. **2.11.9** The occurrence of low-elevation fires burning upward into spruce-fir forest will increase over time to promote the heterogeneity of spruce-fir forests.	**2.11.12** The wildland fire response on both SJNF and TRFO lands will include evaluations for immediate suppression, management for resource benefit, or a combination of both actions to be taken.	H	Number of fires and response taken	Planning area	Annually	Durango Dispatch Annual Report; Mesa Verde National Park, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, BLM

Table 4.1.10: Air Quality

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.12.1 Air quality in the Weminuche Wilderness Class I Area maintains natural conditions. Indicators of natural conditions include air quality–related values of visibility, water and snow chemistry, precipitation/atmospheric chemistry, soils chemistry, and aquatic/terrestrial biota. **2.12.2** Air quality for the Class II Areas within the planning area are maintained or improved with respect to pollutant concentrations so that human health and the integrity of associated aquatic and terrestrial ecosystem components are protected. **2.12.5** Visibility in the Weminuche Wilderness continues to improve, so that best natural conditions are achieved.	**2.12.8** For the Weminuche Wilderness Class 1 Area, improve air quality so that flora and fauna AQRVs that are at risk (including lichens, amphibians, and aquatic organisms) recover to a level that is within the limits of acceptable change (compared to natural conditions) by the next planning period so that there is no humanly perceptible change in visibility (visual range, contrast, coloration) from that which would have existed under natural conditions (conditions substantially unaltered by humans or human activities). **2.12.9** Over the implementation-life of the LRMP on both BLM and USFS lands, prevent or reduce the atmospheric deposition of nitrogen and sulfur and allow no more than a 10% change from established baseline for lakes with an ANC ≥25 µeq/L, and for lakes with an ANC<25 µeq/L allow no more than 1 µeq/L decrease in ANC. **2.12.10** Over the implementation-life of the LRMP, prevent or reduce airborne nutrient and mercury deposition impacts to sensitive high-elevation lakes in the Weminuche Wilderness Class I Area; allow no detectable mercury, no more than 2 µeq/L of ammonium, and no late summer nitrate.	H	AQRVs; these include water quality, visibility, lichens, soils, aquatic organisms, flora, etc., within limits of acceptable change. Air quality maintained at better than State air quality standards.	SJNF and TRFO	5 years	CDPHE, National Park Service, BLM, EPA
2.12.6 Management activities on the SJNF control dust in order to minimize impacts of dust-on-snow events.	Prevent or reduce particulate pollution (see Guideline 2.12.20)	H	Meet air quality standards, reduce atmospheric deposition of pollutants, reduce particulate pollution (dust). Visibility AQRV within limits of acceptable change.	SJNF and TRFO	5 years	CDPHE, National Park Service, BLM, EPA

Table 4.1.11: Access and Travel Management

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.13.1 The transportation system within the SJNF planning area consists of roads, high-clearance or primitive roads, trails, and bridges that are fiscally sustainable and safe as appropriate for the designated use or desired user experience; they allow for the use of, and enjoyment by, the public, and they meet resource management objectives. Sufficient condition surveys and inspections are conducted to promote road safety and to prioritize road maintenance expenditures. **2.13.2** The SJNF transportation system provides reasonable and legal access for resource management and recreation; it is dynamic and adaptable to resource and user needs. **2.13.5** The road and trail system within the SJNF has adequate destination signage, mapping, and route markers to assist transportation system users in navigating throughout the planning area. **2.13.12** Transportation system components on the SJNF are designed, constructed, and maintained to avoid encroaching onto streams and/or onto riparian areas and wetland ecosystems in ways that impact channel fluctuation or channel geometry (the relationships between channel discharge and channel cross-sectional factors, such as area, width, and depth). Sediment delivery from the transportation system does not measurably impact pool frequency, pool habitat, and/or spawning habitats.	**2.13.17** The SJNF will perform maintenance activities annually on 75% of roads maintained for passenger vehicles (NFS maintenance level 3, 4, and 5). **2.13.20** The SJNF performs the required schedule of condition surveys for use in prioritizing road maintenance expenditures.	H	Miles of passenger car roads improved Miles of passenger car roads maintained Number of conditions surveys completed	SJNF planning area	5 years	SJNF NFS Source: NRM database roads and trails Annual condition surveys and road and trail inspections

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.13.6 The public has access to information about the SJNF transportation systems (including specific travel route designations, available recreational opportunities, environmental stewardship guidelines, and safe travel information). **2.13.7** Motorized use on the SJNF occurs only on designated roads and trails, as well as in small designated open areas (except as exempted by 36 CFR Part 212.51). No new unauthorized or user-created routes develop within the SJNF. Any addition of new designated routes to the transportation system will be analyzed using the appropriate planning process and level of environmental analysis. **2.13.8** Roads and trails within the SJNF that are identified for closure are decommissioned and reestablished with native vegetation cover.	**2.13.19** Travel management plans are developed in accordance the designation criteria in 36 CFR 212, Subpart B, for NFS lands. Routes that are not included in the designated motorized transportation system will be evaluated for their resource impact potential. Those with high potential for resource impacts will be prioritized for decommissioning as part of the implementation plan for each individual travel management plan decision. Each implementation plan will identify those routes prioritized for decommissioning, the method(s) that may be used, and a schedule for completion.	H	Travel management plans completed Miles of roads prioritized for decommissioning Miles of roads decommissioned	SJNF	Annually	SJNF NFS Source: NRM database roads and trails
2.13.9 Roads on SJNF are managed by the appropriate public road authority when any one of the following conditions exists: the road serves predominantly non-SJNF traffic; the road is necessary for mail, school, and/or other local governmental purposes; the road provides year-long residential access to private property within, or adjacent to, the planning area. **2.13.10** Travel management plans are complete for all SJNF within 5 years of adopting this LRMP. Travel management planning remains a continuous process designed to improve the transportation system on the SJNF. **2.13.11** Motorized and non-motorized users, as well as local, state, tribal, and other federal agencies, are actively engaged in travel management planning, route designation and implementation, and route monitoring on the SJNF.	**2.13.16** Transfer jurisdiction of roads identified through travel management planning as having predominant use that is inconsistent with the mission of the jurisdictional managing authority to a managing authority whose mission is consistent with the road use and is willing to accept the road transfer. The SJNF identify in each travel management planning decision those roads, if any, that are priority for jurisdictional transfer. The SJNF will transfer ownership to the appropriate managing authority of 50% of the roads identified as priority for jurisdictional transfer through travel management decisions made up to the initial 5-year anniversary of the LRMP implementation. These jurisdictional transfers will be completed within 15 years of the LRMP implementation.	M	Miles of roads transferred to the appropriate managing authority jurisdiction.	SJNF planning area	Annually	La Plata, Dolores, Montezuma, San Juan, and Archuleta Counties.

Table 4.1.12: Recreation, Scenery, and Wilderness

Desired Condition—Recreation and Scenery	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.14.1 Activities are regulated primarily in order to protect the quality of the recreation settings and benefits, as well as to protect natural and cultural resources. Managers monitor conditions and implement management strategies in order to maintain desired setting characteristics.	Ensure public is getting these experiences on the SJNF.	H	National Visitor Use Monitoring Program	Forestwide	5 years	Contract survey
2.14.14 Much of the planning area has an ROS setting of Semi-Primitive and Roaded Natural. **2.14.28** In developed recreation sites, the USFS and BLM provide a wide range of visitor information, education, and interpretation consistent with their interpretive and conservation education strategy.	Provide for public health and safety and meet minimum standards for site operations and maintenance.	H	INFRA database; concessionaire annual review ratings; occupancy rates; visitor comment forms	Forestwide	Annual	Concessionaire, in-house data collection, public comments
2.14.2 Established road and trail travel corridors offer high-quality scenery. Developed recreation facilities (including trailheads) provide relatively easy access for visitors, enabling them to enjoy a wide range of recreation experiences. **2.15.3** Views from developed sites, roads, trails, and viewpoints of concern are predominantly within natural-appearing landscapes. Views within developed recreation sites may appear heavily altered (due to recreation support facilities, recreation developments, hazard tree management, etc.).	Ensure scenery is protected via plan guidance and future project NEPA screening.	M	Examine one or more NEPA actions with potential to impact scenic values; assess adherence to scenic and plan guidance	Project specific	5 years	In-house, public comments

Table 4.1.13: Heritage

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.16.1 Significant heritage and cultural resources, such as USFS Priority Heritage Assets and sites on the NRHP, are maintained in good to excellent physical condition. Significant cultural values are protected or preserved. Heritage and cultural sites are preserved and stabilized, and may be available for interpretation and research; they may have site-specific management plans. Sites are protected from physical damage and excessive wear and tear resulting from visitor use. **2.16.8** Select historic cabins are restored and adaptively reused for appropriate recreation and/or for interpretive use.	**2.16.13** Over the implementation-life of the LRMP, protect/preserve/stabilize at least seven significant heritage/cultural resources that have identified deferred maintenance needs that if not addressed will result in loss of the resource. **2.16.16** Over the implementation life of the LRMP, implement the Anasazi National Register District Monitoring Plan and new site monitoring plans for the Lost Canyon and Spring Creek National Register Districts.	H	Heritage program managed to standard and Secretary's report to Congress: Number of heritage/cultural sites stabilized	Planning area	10 years	Colorado State Historic Preservation Office, Tribes, volunteers, schools, State Historical Fund, grants
2.16.6 A management presence at key heritage and cultural resource sites is provided to protect sensitive or heavily visited sites from inappropriate use or vandalism. **2.16.10** Looting of sites is reduced through increased public awareness and education related to cultural resources. Vandalism at sites is promptly remedied to prevent recurrence.	**2.16.14** Annually, post protective signage and/or surveillance cameras on at least one heritage and cultural resource sites that is at-risk for vandalism.	H	Use of protective signage Tracked in INFRA Heritage modules	Planning area	Annually	San Juan Mountains Association
3.16.1 Archaeological sites are protected and preserved for their scientific, educational, social, and cultural values.	**3.16.9** Within 5 years, create a dispersed recreation plan that is congruent with desired conditions and that would be incorporated into the management plan for the Falls Creek Archaeological Area. **3.16.10** Within 1 year, implement a site-steward program. **3.16.11** Within 5 years, develop and implement a rock art preservation plan in order to mitigate deterioration.	H	Heritage program managed to standard and Secretary's report to Congress: Development of CRMP Tracked in INFRA Heritage modules	Falls Creek	5 years	SJNF

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
3.16.5 Native American tribes and Pueblos are consulted with regard to the development of appropriate off-site educational materials.	**3.16.12** Within 5 years, develop appropriate and sensitive off-site interpretive and educational materials. Make the information from the collection analyses available to researchers.	H	Heritage program managed to standard and Secretary's report to Congress: Interpretive materials developed Tracked in INFRA Heritage modules	Falls Creek	5 years	SJNF, Native American Tribes and Pueblos, grants
3.17.1 Chimney Rock National Monument is managed in an exemplary manner in accordance with the National Monument Proclamation. **3.17.2** Native Americans tribes and Pueblos are consulted with regard to the development of appropriate management and interpretation; are allowed access to the Monument for traditional and ceremonial uses; and their values are respected and preserved. **3.17.3** Compatible recreational opportunities for the public are provided, in accordance with the National Monument Proclamation.	**3.17.4** Within 3 years, develop a comprehensive management plan for the Chimney Rock National Monument.	H	Heritage program managed to standard and Secretary's report to Congress: Interpretive materials developed Tracked in INFRA Heritage modules	Chimney Rock	5 years	SJNF, Chimney Rock Interpretive Association, Native American Tribes and Pueblos
3.26.1 McPhee offers diverse recreation for communities while, at the same time, preserving archaeological and paleontological resources. **3.26.8** The SJNF partners with the Bureau of Reclamation to address impacts to archaeological resources and NAGPRA issues.	**3.26.13** Within 5 years implement archaeological monitoring plan.	H	Heritage Program Managed to Standard & Secretary's Report to Congress- sites monitored and protected Tracked in INFRA Heritage modules	McPhee	5 years	SJNF, Bureau of Reclamation

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
3.26.4 Interpretive and educational opportunities enhance visitor experience and increase stewardship of sites.	**3.26.10** Within 5 years, implement site-steward and "adopt-a-site" programs. **3.26.11** Over the implementation-life of the LRMP, develop two interpretive trails.	H	Heritage Program Managed to Standard & Secretary's Report to Congress- sites monitored and protected; interpretive materials developed Tracked in INFRA Heritage modules	McPhee	5 years—site stewards 10 years—interpretive trails	SJNF, San Juan Mountains Association
3.26.5 User-made trails are rerouted or eliminated in order to avoid impacts to archaeological and paleontological sites.	**3.26.14** Within 3 years reroute or close user-made trails that are impacting archaeological resources.	H	Heritage program managed to standard and Secretary's report to Congress: Sites protected Tracked in INFRA Heritage modules	McPhee	3 years	SJNF, San Juan Mountains Association, Southwest Conservation Corps
3.26.9 Partner with research organizations to test archaeological sites and conduct data recovery if sites are being impacted.	**3.26.12** Within 10 years, test two sites for subsurface archeological deposits.	H	Heritage program managed to standard and Secretary's report to Congress: Sites evaluated, research, public information Tracked in INFRA Heritage modules	McPhee	10 years	SJNF, Crow Canyon Archaeological Center, universities, colleges, interns, San Juan Mountains Association, grants

Table 4.1.14: Paleontology

Desired Condition	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.17.1 Acquiring better knowledge of paleontological resources on SJNF lands is emphasized.	**2.17.5** Over the life of the plan, identify and document two paleontological sites.	M	Number of sites documented	Planning area	10 years	Colleges, universities
2.17.4 The McPhee Reservoir sauropod locality is actively managed through a long-term stewardship agreement to preserve dinosaur partial skeletons actively eroding along margin of reservoir. Known and newly discovered paleontological localities are monitored and managed using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	**2.17.6** At a minimum, monitor one paleontological locality per year.	M	Number of site visits	Planning area, McPhee Reservoir	Annually	Colleges, universities
Ensure that paleontological resources are considered during the planning process using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	**2.17.7** Where feasible conduct fossil resource inventories in areas where they are needed on a project basis over the life of the plan.	H	Acres of inventory	Planning area	Annually	Colleges, universities
2.17.2 Paleontological resources are available for appropriate scientific, educational, and, where appropriate, recreational uses by present and future generations.	**2.17.8** Increase opportunities for outdoor recreational experiences and volunteer projects focused on fossil resource management, and increase the number of partnerships with educational and research institutions.	M	Number of partnerships	Planning area	Annually	Colleges, universities

Table 4.1.15: Minerals and Energy

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.19.2 Mineral materials (including gravel and decorative stone) are available to support resource management needs, personal and hobby use, and commercial pursuits. **2.19.4** Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	Inspect and verify production at mineral material sites **2.19.8** Process requests for mineral materials in a timely manner consistent with plan direction and applicable laws. Identify areas suitable for and establish common use area(s) and/or community pits to provide sources of mineral materials to the public.	M	Number of inspection reports; days to process applications	Planning area	5 years	
2.19.4 Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	Inspect locatable mineral sites for surface management	M	Number of inspection reports	Planning area	5 years	
Potential social and resource impacts from the development of the Paradox Basin play area are minimized by phasing oil and gas leasing to achieve orderly economic development of portions of the play zones at any given time. **2.19.5** All oil and gas well fields starting at the field development stage, and all other established well fields where practicable maximize the co-location of facilities to minimize construction footprint and reduce tailpipe emissions.		L	Number of APDs processed annually Acres of new ancillary facilities within the Paradox Basin Planning Area annually	Paradox Basin	5 years	

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.19.3 Ground disturbance from development of oil and gas fields is minimized by centralizing facilities, requiring multiple wells per pad, and minimizing the road system required to access facilities. **2.19.5** All oil and gas well fields starting at the field development stage and all other established well fields where practicable maximize the collocation of facilities to minimize construction footprints and reduce tailpipe emissions. **2.19.6** Oil and gas leasing and development activity on the SJNF occurs in an orderly manner to minimize impacts to lands and resources and increase efficiency of operations.	**2.19.7** Over the next 20 years, centralize facilities and engines to minimize the number of well head engines and optimize well engines so they use the minimum cumulative horsepower to obtain the maximum efficiency for all well fields beginning at the field development stage and all other established well fields where practicable.	H	Determine whether impacts were understated or overstated, if mitigation measures are working as intended, if there are unforeseen impacts and whether the impacts can be adequately mitigated.	SJNF	5 years	Industry, BLM

Table 4.1.16: Abandoned Mine Lands

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.21.3 Mine waste repositories are protected and physical safety closures are protected or replaced during any USFS-authorized actions.	**2.21.9** On all SJNF lands, close or mitigate high-priority sites over the life of the LRMP. On SJNF lands, newly discovered sites will be prioritized for closure or mitigation based on hazard.	H	Number of safety closures	Planning area	5 years	Colorado Division of Reclamation Mining and Safety
2.21.1 Abandoned mine reclamation within the planning area contributes to water quality improvement and to historic resource protection. **2.21.6** The AML program coordinates with affected parties, partners, and stakeholder groups on AML projects.	**2.21.7** Stabilize, rehabilitate, or restore AML on priority sites on an annual basis in order to improve water quality and watershed condition.	M	Acres physically and directly improved by AML program annually	Planning area	5 years	EPA, Animas River Stakeholders Group and other watershed groups, Riverwatch

4.2 Tres Rios Field Office Monitoring Plan

4.2.1 Implementation of the LRMP

Implementation of the LRMP begins once the Record of Decision for the Proposed LRMP is signed. Decisions made through the planning process are implemented over the life of the LRMP. Some of the decisions are immediate and go into effect with the Record of Decision, while other decisions would be implemented over time after site-specific environmental review is completed. In addition, specific programs have requirements that must be followed in order to make certain decisions effective. An example of a land use plan decision that requires an additional action for implementation would be a recommendation to withdraw lands from entry under the mining laws. Formal action requiring Secretarial-level review and decision making would follow if the BLM planning process results in a withdrawal recommendation and the applicable regulations in 43 CFR 2300 are followed.

Any future proposals or management actions will be reviewed against the LRMP to determine if the proposal is in conformance with the LRMP. While the FEIS for the TRFO LRMP provides the compliance with NEPA for the broad-scale decisions that are made in the Record of Decision, it does not replace the requirement to comply with NEPA for most site-specific implementation actions.

During the life of the LRMP, the BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data or support new management techniques, BMPs, and scientific principles. To the extent that such new information or actions address issues covered in the plan, the BLM will integrate the data through plan maintenance. In cases where new information would cause a more significant change in planning direction, a plan amendment may be required.

4.2.2 Land Use Plan Implementation Monitoring

Due to staffing and funding levels, monitoring is prioritized consistent with the goals and objectives of the RMP in cooperation with local, state, and other federal agencies.

The TRFO conducts monitoring and evaluation of RMP decisions to measure the effectiveness of the management action and allowable use decisions in achieving the RMP's goal and objectives. Monitoring and evaluation analyzes the current resource conditions as a result of implemented actions and identifies and recommends alternatives or modified actions, as necessary, to reach established objectives and goals. This process provides the optimum means to check the effectiveness of management actions. Because the capability to execute the process at the optimum level can vary from year to year, monitoring will be prioritized. BLM would use data collected by other agencies, local governments, and other sources when appropriate and available.

Plan implementation is a continuous process occurring over the life of the resource management plan that will consider changing circumstances and new information through monitoring. The goal is to maintain a dynamic resource management plan that is evaluated and amended if necessary on an issue-by-issue basis.

4.2.3 Data Collection

In cooperation with local, state, and other federal agencies, the BLM will collect, analyze, and report monitoring data that allow for the determination of cause and effect, conditions, trends, and predictive modeling of land use authorizations. Monitoring methods are implemented to collect data that establish current conditions and reveal any change in the indicators. Monitoring techniques consider when, where, and frequency. The data collected through monitoring provide a variety of information applicable to one or more resource uses. To increase effectiveness, efficiency, and eliminate duplication, monitoring methods should be designed to address as many uses as possible. The BLM will rely upon cooperating agencies for the funding, facilities, and labor to assist in or perform this data collection.

4.2.4 Monitoring

Monitoring is the repeated measurement of activities and conditions over time. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives.

Monitoring determines whether planned activities have been implemented in the manner prescribed by the plan. This monitoring documents BLM's progress toward full implementation of the land use plan decision. There are no specific thresholds or indicators required for this type of monitoring.

Monitoring also is used to determine if the implementation of activities has achieved the desired goals and objectives. This requires knowledge of the objectives established in the RMP as well as indicators that can be measured. Indicators are established by technical specialists in order to address specific questions, and thus avoid collection of unnecessary data. Success is measured against the benchmark of achieving desired future conditions established by the plan.

Monitoring is also used to ascertain whether a cause-and-effect relationship exists among management activities or resources being managed. It confirms whether the predicted results occurred and if assumptions and models used to develop the plan are correct. This type of monitoring is often done by contract with another agency, academic institution, or other entity, and is usually expensive and time consuming since results are not known for many years.

4.2.5 Components of the Monitoring Plan

The monitoring plan presented in the tables below contains seven components that link monitoring efforts directly to the plan components presented in this LRMP, and guide monitoring activity for each element of the plan. These components are focused around selected desired conditions and are designed to test relevant assumptions, track relevant changes, and measure management effectiveness and progress towards achieving or maintaining the LRMP's desired conditions.

1. **Program Element:** BLM program elements are defined as specific activities or products for which the BLM captures cost data (i.e., determines cost "drivers," collects activity data, calculates the cost of delivering that activity or product). The description of each program element is followed by its two-letter code.
2. **Frequency of Reporting:** Frequency of reporting describes the timing of monitoring and evaluation efforts. Much data are collected annually, while other data are collected at longer or shorter intervals based on the length of time needed to discern a measureable change.
3. **Desired Conditions:** The desired conditions are selected from Chapters 2 and 3 of the LRMP and serve as the basis for the monitoring plan. These are the "drivers" of the monitoring plan and provide the "questions" that this monitoring plan seeks to answer.
4. **Objectives:** The objectives are projections of measureable and time-specific outcomes or accomplishments that, if achieved, would contribute to maintaining or reaching desired conditions during the life of the LRMP. They relate directly to the desired conditions and are also selected from Chapters 2 and 3 of the LRMP.
5. **Scale:** Scale describes the level of analysis with respect to land size or level of application. This measure is important in describing impacts dealing with habitat heterogeneity and population viability issues, as well as describing cumulative impacts related to, or resulting from, management actions.
6. **Performance Measures and Indicators:** This column identifies indicators that will be used to gauge or track accomplishments that lead the TRFO toward meeting objectives and desired conditions. These indicators provide a measureable quantitative or qualitative parameter.
7. **Sources and Partners:** Potential data sources for information and partners that may be involved in providing input into the monitoring process or identifying areas where research may be needed.

Table 4.2.1: Terrestrial Ecosystems

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Fuels Treatment (MT), Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Monitor Fuels Treatment in Wildland Urban Interface (LC)	10 years 15 years	**2.2.1** The composition, structure, and function of terrestrial ecosystems are influenced by natural ecological processes, including disturbance events such as fire, infestations by insects or disease, winds, and flooding.	**2.2.47** Within 10 years, inventory and map stand structure changes that have resulted from spruce beetle mortality and wildfire on TRFO lands. **2.2.60** After natural disturbance events or during restoration projects over the next 15 years, increase the variety of native non-commercial tree and shrub species on a minimum of 25 acres of TRFO lands.	Landscape	Acres	Rangeland Improvement Project System (RIPS), NFPORS
Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK), Monitor Fuels Treatment (MT)	15 years 30 years of review at 10-year increments 15 years	**2.2.4** Future biodiversity, especially for endangered, rare, or dwindling species, is protected in the face of a changing climate by safeguarding habitats, preserving genetic diversity, and cooperating with seed banking efforts that provide secure, long-term storage of plant genetic resources. **2.2.17** Local seeds of desirable native plant species are available for revegetation and restoration efforts.	**2.2.57** Over the next 15 years, secure a reliable source of local seed stock for eight or more native grass, forb, and shrub species (including Arizona fescue *(Festuca arizonica)*) for use in revegetation and restoration projects on TRFO lands. **2.2.58** Over the life of the LRMP, collect and provide for the long-term storage of local seed from ten vulnerable native grass, forb, and shrub species (including alpine) in order to protect genetic sources. **2.2.60** After natural disturbance events or during restoration projects over the next 15 years, increase the variety of native non-commercial tree and shrub species on a minimum of 25 acres of TRFO lands. **2.2.62** Over the next 15 years, revegetate and reclaim five acres of TRFO lands using native early-successional plant species developed from local plant sources in order to accelerate restoration success.	Landscape	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Fuels Treatment in Wildland Urban Interface (LC), Monitor Fuels Treatment (MT), Monitor Terrestrial Habitat (MQ)	5 years	**2.2.10** Forested terrestrial ecosystems display a FRCC of 1. **2.2.15** Forested terrestrial ecosystems have stand structures and tree species composition that offer resistance and resilience to changes in climate (including extreme weather events) and epidemic insect or disease outbreaks. **2.2.22** Ponderosa pine, warm-dry mixed conifer, and cool-moist mixed conifer forest stands in the old-growth development stage that have not been previously harvested are managed for their old-growth values through active or passive management. **2.2.23** Ponderosa Pine Forest Desired Condition **2.2.24** Warm Dry Mixed Conifer Forest Desired Condition **2.2.25** Cool Moist Mixed Conifer Forest Desired Condition	**2.2.52** Within 15 years, increase the percentage of ponderosa pine forest in the young development stage from zero to 3% on TRFO lands through the use of mechanical treatments and prescribed fire. **2.2.53** Within 15 years, increase the percentage of warm-dry mixed conifer forest in the young development stage from zero to 3% on TRFO lands through the use of\mechanical treatments and prescribed or natural fire. **2.2.54** Within 15 years, improve the composition, structure, and function of 5,000 acres of ponderosa pine forest through the use of low-intensity fire.	Landscape	Acres of treatment and/or fire size	RIPS, project monitoring, NFPORS

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Fuels Treatment (MT), Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK), Monitor Fuels Treatment in Wildland Urban Interface (LC)	5 years	**2.2.12** The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased. **2.2.28** Pinyon-Juniper Woodland Desired Condition **2.2.30** Desired conditions for Sagebrush Shrublands **2.2.31** Desired conditions for Semi-Desert Shrublands **2.2.32** Desired conditions for Semi-Desert Grasslands	**2.2.56** Within 15 years, improve the abundance and distribution of perennial native bunchgrasses on 3,000 acres of semi-desert shrublands or grasslands within TRFO.	Landscape	Acres	RIPS, NFPORS
Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK)	10 years	**2.2.34** Alpine terrestrial ecosystems sustain their ecosystem diversity. They display a diverse composition of desirable native plant species and vegetation communities (including fellfield and turf types). Invasive plant species are absent or rare.	**2.2.58** Over the life of the LRMP, collect seed from 10 local vulnerable grass, forb, and shrub species, including some alpine species, for long-term storage to protect genetic sources. **2.2.63** Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine- dependent species on 100 acres of TRFO lands through implementing recreation management plans, completing mine land reclamation, or conducting other management activities.	Landscape and project	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Lake/Wetland Habitat (MN), Monitor Terrestrial Habitat (MQ)	Annually in occupied critical habitat, and once every 5 years in unoccupied critical habitat	**2.2.9** Terrestrial ecosystems, including habitat for special status plant species, are productive, sustainable, and resilient, and provide goods and services over the long term. **2.2.11** Canyon escarpments, and the terrestrial ecosystems that occur on them, serve as refugia for native biota. These escarpments are associated with the following canyons: Lower Dolores River, Wild Steer, Coyote Wash Spring, and McIntyre. They also include the Mesa Verde Escarpment. **2.2.41** Fens, wetlands, and hanging gardens have the water sources and hydrologic systems necessary to support and sustain the special status plant species associated with them. **2.2.44** Areas identified as critical habitat or proposed critical habitat for federally listed plant species have the characteristics necessary to provide for the growth and reproduction of the federally listed plant species for which they were designated.	Over the next 10 years, monitor 20 known special status plant species locations and their habitats.	Project and landscape	Acres evaluated; condition of special status species habitat; continued presence of special status species in these habitats. In occupied critical habitat for Pagosa skyrocket, the indicator is the continued presence of the species. In unoccupied critical habitat for Pagosa skyrocket, the indicators are the presence of suitable plant communities, habitat for pollinators, and appropriate disturbance regimes.	Colorado Natural Heritage Program, USFWS
Evaluate Rangeland Health (MJ), Monitor Grazing Allotments (ML), Monitor Terrestrial Habitat (MQ)	5 years	**2.2.35** Soil productivity is maintained at or trending towards site potential. **2.2.37** Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion. **2.2.40** Biological soil crusts are maintained or increased in pinyon-juniper woodlands, sagebrush shrublands, and semi-desert shrublands and grasslands.	**2.2.45** Within 10 years, restore or improve soil productivity and soil carbon on at least 5 miles of routes that will be closed or decommissioned on TRFO lands. **2.2.59** Use locally produced biochar to sequester carbon, reduce erosion, and enhance soil productivity and water retention on a minimum of 0.5 acre per year on TRFO lands for 5 years.	Project and landscape	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Terrestrial Habitat (MQ)	Ongoing	**2.2.74** Old growth ponderosa pine, old growth pinyon-juniper, and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on TRFO lands.	Develop an old-growth database and conduct old-growth inventories in potential old-growth stands of ponderosa pine, warm-dry mixed conifer, and pinyon-juniper.	Project and landscape	Development of an old-growth database	Old-growth database (to be developed)

Table 4.2.2: Terrestrial Wildlife

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory Terrestrial Habitat (CB)	Annual	**2.3.1** Wildlife populations are self-sustaining, connected, and genetically diverse across TRFO lands. **2.3.3** Invasive exotic wildlife species and diseases do not become established within the planning area. Existing invasive exotic wildlife species and diseases do not spread. **2.3.4** Habitat components (e.g., snags and downed logs) are maintained. Unique habitat types (e.g., springs, seeps, willow carrs, caves, and cliffs) support associated flora and fauna (with abundance and distribution commensurate with the capability of the land). **2.3.7** Snag and downed wood features occur in quantities that support self-sustaining populations of associated species. **2.3.8** Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations.	**2.3.29** Inventory and monitoring: Improve knowledge on the distribution of wildlife special status species and their habitats by inventorying habitat and species as identified in the LRMP monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.	Project to planning area (varies)	Acres inventoried	BLM, SJNF, CPW, Colorado Natural Heritage Program

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Apply Shrub/Grass Vegetation Treatments (JA)	Annual		**2.3.24** Treat 2,000 or more acres of vegetation on TRFO lands over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area. **2.3.26** Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.	Project	Acres treated	BLM
Implement Threatened and Endangered Species Recovery Actions (JP)	Annual	**2.3.15** Areas identified as critical habitat or proposed critical habitat for special status wildlife species have the characteristics to support sustainable populations, promoting recovery of the species.	**2.3.26** Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.	Project	Recovery actions preformed	BLM, USFWS, San Miguel Gunnison Sage-grouse Working Group
Implement Conservation Actions for Non-ESA Species and Communities	Annual	**2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	**2.3.24** Treat 2,000 or more acres of vegetation on TRFO lands over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area. **2.3.27** Nokomis fritillary butterfly: Over the life of the LRMP, restore the hydrologic conditions and plant communities during project implementation at springs or seeps capable of supporting Nokomis fritillary while, at the same time, retaining the water development for livestock or other uses.	Project	Actions performed	BLM

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Terrestrial Habitat (MQ)	Annual	**2.3.2** Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance that do not reduce habitat effectiveness. **2.3.4** Habitat components (e.g., snags and downed logs) are maintained. Unique habitat types (e.g., springs, seeps, willow carrs, caves, and cliffs) support associated flora and fauna (with abundance and distribution commensurate with the capability of the land). **2.3.7** Snag and downed wood features occur in quantities that support self-sustaining populations of associated species. **2.3.8** Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations. **2.3.9** Ecosystems and habitat conditions for terrestrial wildlife species sensitive to human disturbance are maintained. **2.3.10** Vegetation openings created through management actions preserve the natural patchiness inherent in Southern Rocky Mountain ecosystems. **2.3.11** Habitat continuity and travel corridors exist and persist to facilitate species movement and establishment into newly suitable areas as a result of changing habitats. **2.3.12** Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation. **2.3.14** Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for wildlife special status species. **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	**2.3.29** Inventory and monitoring: Improve knowledge regarding the distribution of wildlife special status species and their habitats by inventorying habitat and species as identified in the LRMP monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species. **2.3.30** Invasives and disease: Over the life of the LRMP, coordinate with CPW to prevent introductions or spread of fish or terrestrial wildlife species, as needed, where there is potential for negative impacts on wildlife special status species.	Project to planning area (varies)	Acres monitored	BLM, USFS, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Species Populations (MR)	Annual	**2.3.1** Wildlife populations are self-sustaining, connected, and genetically diverse across TRFO lands. **2.3.2** Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance that do not reduce habitat effectiveness. **2.3.5** Large predator species contribute to ecological diversity and ecosystem functioning. **2.3.8** Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations. **2.3.12** Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation. **2.3.14** Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for wildlife special status species. **2.3.17** Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species. **2.3.18** Special status species are able to disperse within the planning area and onto adjacent lands, allowing for the interchange between populations and the maintenance of genetic diversity.	**2.3.29** Inventory and monitoring: Improve knowledge regarding the distribution of special status wildlife species and their habitats by inventorying habitat and species as identified in the monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.	Project to planning area (varies)	Populations monitored	BLM, USFS, CPW, Colorado Natural Heritage Program

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Shrub/Grass Vegetation Treatments (MX)	By project	**2.3.10** Vegetation openings created through management actions preserve the natural patchiness inherent in Southern Rocky Mountain ecosystems. **2.3.12** Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation. **2.3.14** Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for special status wildlife species.	**2.3.24** Treat 2,000 or more acres of vegetation on TRFO lands over the life of the LRMP to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area. **2.3.26** Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.	Project	Acres monitored	
Monitor Steam/ Riparian Habitat (MO)	Annual	**2.5.1** Long-term sustainability of aquatic ecosystems is maintained. **2.5.2** Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities. **2.5.3** The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species. **2.5.10** All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species. **2.5.11** Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.		Planning area	Miles	BLM, USFS, CPW
Monitor Species Populations (MR)	Annual	**2.5.3** The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species. **2.5.10** All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species. **2.5.11** Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.		Planning area	Miles	BLM, USFS, CPW

Table 4.2.3: Riparian and Wetland Ecosystems

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Weed Treatments (MK)	5 years	**2.4.1** Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.	**2.4.13** Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on TRFO lands currently classified as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%. **2.4.14** Within 10 years, determine the functional condition of 25 miles on TRFO of riparian area and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998). **2.4.16** Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and if needed conduct follow-up treatment to prevent the establishment or spread of other invasive species. **2.4.17** Maintain native riparian and upland ecosystems that have been treated to control non-native species on a minimum of 50 miles of TRFO stream reaches over the next 20 years.	Site, project	Acres evaluated, presence or absence of target weed species, success of weed treatment objectives	Southwest Youth Corps, Canyon Country Youth Corps, Western Youth Corps, The Nature Conservancy, Tamarisk Coalition, Walton Family Foundation

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Lake/Wetland Habitat (MN)	10 years	**2.4.1** Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare. **2.4.2** Riparian area and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development. **2.4.7** The composition, structure, and function of fens and hanging gardens are intact (including their native plant species, organic soils, and hydrology). **2.4.8** Riparian area and wetland ecosystems that contain plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks are protected, have habitat to expand into, and have the water quantity and hydrologic systems necessary in order to support and sustain these communities. **2.4.9** Soil productivity is intact on all riparian area and wetland ecosystems in the TRFO. **2.4.10** Long-term levels of soil organic matter and soil nutrients are maintained at acceptable levels on all riparian area and wetland ecosystems in the TRFO. **2.4.11** Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion on all riparian area and wetland ecosystems in the TRFO. **2.4 12** Long term impacts to soils (e.g., erosion, compaction, displacement, puddling, and/or severe burning) from management actions are rare on all riparian area and wetland ecosystems in the TRFO.	**2.4.15** Within 15 years, treat three fens with impaired function on TRFO lands. **2.4.16** Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and conduct follow-up treatment if needed to prevent the establishment or spread of other invasive species.	Site	Acres monitored, proper function of ecosystems	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Stream Riparian Habitat (MO)	5–10 years	**2.4.1** Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare. **2.4.2** Riparian area and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development. **2.4.3** Forest and shrubland types display hydrophytic trees and shrubs in a variety of size classes; they provide terrestrial and aquatic habitats, stream shading, woody channel debris, aesthetic values, and other ecosystem functions. **2.4.4** Woody debris in a variety of sizes is present in forest and shrubland riparian area and wetland ecosystem types. **2.4.5** Riparian area and wetland ecosystems are resilient to change from disturbances (including floods, fire, and drought) and offer resistance and resilience to changes in climate. **2.4.6** Riparian area and wetland ecosystems have flow regimes and flooding processes that contribute to stream-channel and floodplain development, maintenance, and function, and facilitate the regeneration of native hydrophytic plants (including narrowleaf cottonwood and Rio Grande cottonwood) that depend on flooding for regeneration. **2.4.8** Riparian area and wetland ecosystems that contain plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks are protected, have habitat to expand into, and have the water quantity and hydrologic systems necessary in order to support and sustain these communities.	**2.4.13** Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on TRFO lands currently classified as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%. **2.4.14** Within 10 years, determine the functional condition of 25 miles on TRFO of riparian area and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998). **2.4.16** Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and conduct follow-up treatment if needed to prevent the establishment or spread of other invasive species. **2.4.17** Maintain native riparian and upland ecosystems that have been treated to control non-native species on a minimum of 50 miles of TRFO stream reaches over the next 20 years.	Site, project	Miles monitored, proper function of ecosystems	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
		2.4.9 Soil productivity is intact on all riparian area and wetland ecosystems in the TRFO. **2.4.10** Long-term levels of soil organic matter and soil nutrients are maintained at acceptable levels on all riparian area and wetland ecosystems in the TRFO. **2.4.11** Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion on all riparian area and wetland ecosystems in the TRFO. **2.4.12** Long term impacts to soils (e.g., erosion, compaction, displacement, puddling, and/or severe burning) from management actions are rare on all riparian area and wetland ecosystems in the TRFO.				

Table 4.2.4: Aquatic Ecosystems and Fisheries

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Inventory Lakes/Wetland Areas (BU)	Annual	**2.5.2** Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities. **2.5.3** The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species. **2.5.7** Macroinvertebrate diversity and abundance reflect high water quality. **2.5.10** All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.		Planning area	Acres inventoried	BLM, USFS, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Inventory Streams/Riparian Areas (BV)	Annual	**2.5.2** Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities. **2.5.3** The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species. **2.5.4** Channel characteristics, water quality, flow regimens, and physical habitat features are diverse and appropriately reflect the climate, geology, and natural biota of the area. **2.5.7** Macroinvertebrate diversity and abundance reflect high water quality. **2.5.10** All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.				
Apply Stream/Riparian Treatments (JG) Construct Lake/Wetland/Stream/Riparian Projects	Annual		**2.5.15** Annually enhance or restore at least 1 mile of stream habitat to maintain or restore the structure, composition, and function of physical habitat for BLM sensitive species.	Planning area	Miles restored	BLM, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Implement Threatened and Endangered Species Recovery Actions (JP)	By project	**2.5.10** All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species. **2.5.11** Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance. **2.5.12** Threats to Colorado River cutthroat trout and its habitat are eliminated or reduced to the greatest extent possible. **2.5.13** The distribution of Colorado River cutthroat trout is increased where ecologically, sociologically, and economically feasible.	**2.5.17** Over the life of the LRMP, establish one new population of Colorado River cutthroat trout in each Geographic Management Unit within the historical range. (Colorado River Cutthroat Trout Task Force 2001, or as amended.)	Planning area	Miles restored	BLM, CPW
Implement Conservation Actions for Non-ESA Species and Communities (KE)	By project	**2.5.3** The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.	**2.5.15** Annually, enhance or restore at least 1 mile of stream habitat on BLM lands to maintain or restore the structure, composition, and function of physical habitat for BLM Sensitive Species. **2.5.16** Over the life of the LRMP, connect at least 2 miles of fragmented stream habitat on BLM lands to provide for aquatic species movement.	Planning area	Miles restored	BLM, CPW

Table 4.2.5: Water Resources

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Water Resources (MU)	Annual to every 5 years	**2.6.1** State water quality standards and anti-degradation rules are met and state-classified water uses are supported for all water bodies. **2.6.2** Water quality for impaired water bodies on the State of Colorado's 303(d) list move toward fully supporting state-classified uses. **2.6.3** State "Outstanding Waters" within the planning area maintain the high levels of water quality necessary for this status. **2.6.5** Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities. **2.6.10** Potentially usable aquifers and water-bearing intervals possessing groundwater of quality and/or quantity that could provide multiple-use benefits and maintain water quality at natural conditions.	**2.6.17** All approved water developments that involve the use of TRFO lands are permitted pursuant to applicable federal authorizations. **2.6.18** Work with the selenium task force annually to reduce salt delivery to the Upper Colorado River Basin. **2.6.19** Every 5 years, rehabilitate 10 or more acres to reduce erosion and sedimentation delivery to water bodies on BLM lands.	Site, project	Meet water quality standards. Reduce saline contributions to upper Colorado River.	CHPHE, EPA
Monitor BMP Water Resources through Implementation and Effectiveness (MU)	Annual	**2.6.2** Water quality for impaired water bodies on the State's 303(d) list move toward fully supporting state-classified uses. **2.6.3** State "Outstanding Waters" within the planning area maintain the high levels of water quality necessary for this status. **2.6.4** Watersheds within the planning area containing saline soils exhibit stable upland, riparian, and channel conditions that produce water quality as close as possible to reference conditions and the lowest possible saline contributions to the Upper Colorado River (per the Colorado River Basin Salinity Control Act for the BLM) (see Appendix I for saline watersheds). **2.6.5** Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities.	**2.6.20** Over the implementation life of the LRMP, actively participate in the development of all Total Maximum Daily Load determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies on BLM lands within the planning area.	Project	Meet water quality standards. BMPs implemented and effective.	Oil/gas/ mineral company or operator

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Stream Riparian Habitat (MO) Monitor Lake/Wetland Habitat (MN)	Annual to every 5 years	**2.6.5** Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities. **2.6.6** Stream channel types that naturally build floodplains are connected to their floodplains and riparian areas, maintain the ability to transport overbank flows (which occur on an average of every 1.5 years), and are capable of transporting moderate or high flow events. **2.6.7** Physical channel characteristics are in dynamic equilibrium and commensurate with the natural ranges of discharge and sediment load provided to a stream. Streams have the most probable form and expected native riparian vegetation composition within the valley landforms that they occupy and function correctly without management intervention. **2.6.8** Historically disturbed and degraded stream channels recover through floodplain development, the establishment of riparian vegetation with correct structure, composition, and function, and exhibit stable channel geomorphic characteristics. **2.6.12** Upland areas function properly and do not contribute to stream-channel degradation. **2.6.13** The majority of undeveloped and unregulated or free-flowing streams within the planning area are retained in their current undeveloped condition and provide potential reference conditions and offer unique opportunities for aquatic habitat, recreation, species conservation, and pleasing aesthetics.	**2.6.17** All approved water developments that involve the use of SJNF and TRFO lands are permitted pursuant to applicable federal authorizations. **2.6.18** Work with the selenium task force to reduce salt delivery to the Upper Colorado River Basin. **2.6.23** Routes will be decommissioned on TRFO lands as identified through the travel management planning process. Watersheds listed in Appendix I could be considered a priority for decommissioning efforts.	Site, project	Reduce saline contributions to upper Colorado River. Acres rehabilitated or restored in saline watersheds. Acres treated for dust abatement.	CPW, Trout Unlimited

Table 4.2.5: Rangeland Management and Livestock Grazing

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Issue Grazing Permits/Leases (EE)	Annually	**2.7.1** Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact. **2.7.2** Rangelands and permitted livestock grazing use contribute to the maintenance of large open spaces on private lands.		Planning area	Number of grazing permits renewed/acres public lands under term grazing permit	
Monitor Grazing Allotments (ML)	Annually	**2.7.4** Rangelands provide healthy and sustainable habitat for wildlife populations that, in turn, support recreational hunting, fishing, and/or viewing (thereby contributing to the local and regional economy). **2.7.5** Rangelands provide diverse, healthy and sustainable plant communities and conserve soil quality.		Planning area/ project	Allotments monitored	Grazing permittees
Evaluate Land Health (MJ)	Annually	**2.7.5** Rangelands provide diverse, healthy, and sustainable plant communities and conserve soil quality.		Project area	Number of land health assessments completed	Grazing permittees
Inspect Allotments for Grazing Authorization Compliance (NA)	Annually	**2.7.1** Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact. **2.7.4** Rangelands provide healthy and sustainable habitat for wildlife populations that, in turn, support recreational hunting, fishing, and/or viewing (thereby contributing to the local and regional economy). **2.7.5** Rangelands provide diverse, healthy and sustainable plant communities and conserve soil quality.	**2.7.9** Annually administer at least 25% of active grazing allotments to standard on a priority basis, ensuring that all active grazing allotments during the life of the plan receive appropriate administration. Work with grazing permittees and peers to resolve livestock grazing management issues. Take appropriate administrative action as needed to improve livestock grazing management.	Project	Allotments inspected	Grazing permittees

Table 4.2.6: Invasive Species

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory for Presence of Invasive and/or Noxious Weeds (BS)	5 years	**2.8.3** Invasive species, both terrestrial and aquatic, are absent or rare within the planning area, and are not influencing native populations or ecosystem function. **2.8.4** Invasive species are not introduced or spread within protected areas. **2.8.9** Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, from BLM lands.	**2.8.6** Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan.	Project to planning area (varies)	Acres inventoried	Cooperators and contractors
Apply Weed Treatments (JD)	5 years	**2.8.2** Federal lands have a transportation system composed of specific roads and trails that do not contribute to the spread of invasive species along travel corridors. **2.8.3** Invasive species, both terrestrial and aquatic, are absent or rare within the planning area and are not influencing native populations or ecosystem function. **2.8.4** Invasive species are not introduced or spread within protected areas.	**2.8.6** Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan. **2.8.7** Within 15 years, increase annual treatment of noxious weeds on TRFO lands to 10% of known infested acres. **2.8.8** Within 15 years, annual backcountry treatment (including wilderness areas and WSAs) is 10% to 15% of the total annual noxious weed treatment target for TRFO lands. **2.8.9** Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, on TRFO lands.	Project to planning area (varies)	Acres treated	Cooperators and contractors

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Evaluate Weed Treatments (MK)	5 years	**2.8.3** Invasive species, both terrestrial and aquatic, are absent or rare within the planning area and are not influencing native populations or ecosystem function. **2.8.5** Management activities do not contribute to the spread of invasive annual plants or other invasive species.	**2.8.6** Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan. **2.8.9** Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, on TRFO lands.	Project to planning area (varies)	Acres monitored	Cooperators and contractors

Table 4.2.7: Wildland Fire and Fuels

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Implement Fuels Treatments by prescribed fire Within the WUI (JW), Reduce Fuels Mechanically within WUI (JT), Reduce Hazardous Fuels by other means within WUI (JU)	Annually	**2.11.2** Wildfire behavior in the WUI (in and around developed areas and communities) does not result in damage to property and protects public safety. **2.11.4** Use of wildland fire and fuels reduction treatments creates vegetation conditions that reduce the threat to real property and infrastructure from wildfire. **2.11.5** The WUI will have defensible space and dispersed patterns of fuel conditions that favorably modify wildfire behavior and reduce the rate of wildfire spread in and around at-risk communities.	**2.11.10** Annually for the next 10 years, reduce hazardous fuels on an average of 1,000 acres of TRFO lands in the WUI.	TRFO	Acres treated	NFPORS

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Implement Fuels Treatments Outside WUI Using Prescribed fire (JM), Implement Fuels Treatment Mechanically outside of WUI (JQ), Implement Fuels Treatment by other means outside of WUI (JR), Implement Fuels Treatments by prescribed fire Within the WUI (JW), Reduce Fuels Mechanically within WUI (JT), Reduce Hazardous Fuels by other means within WUI (JU)	Annually	**2.11.6** Major vegetation types reflect little or no departure from historic range of variation of fire frequency and intensity (e.g., reflect FRCC 1). **2.11.7** Planned and unplanned fire ignitions are used to increase resiliency and diversity across all forest and rangeland vegetation types. **2.11.8** Fire is reintroduced in order to increase the resistance and resiliency of warm-dry mixed conifer and ponderosa pine forest types on the landscape. **2.11.9** The occurrence of low elevation fires burning upward into spruce-fir forest will increase over time to promote the heterogeneity of spruce-fir forests.	**2.11.11** Annually for the next 10 years, complete an average of 1,000 acres of fuels reduction and resource enhancement on TRFO lands, utilizing fire managed for resource benefit.	TRFO	Acres treated	NFPORS

Table 4.2.8: Air Quality

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Air Quality and Climatic Conditions (MI)	Annual	**2.12.2** Air quality for Class II Areas within the planning area are maintained or improved with respect to pollutant concentrations so that human health and the integrity of associated aquatic and terrestrial ecosystem components are protected. **2.12.3** Activities conducted in the TRFO support natural air quality conditions at nearby Class I areas outside the planning area (such as Mesa Verde National Park). **2.12.4** Visibility at designated scenic vistas in Class II areas is maintained or improved within the planning area (see desired conditions in Section 2.15). **2.12.6** Management activities in the TRFO control dust in order to minimize impacts of dust-on-snow events.	**2.12.9** Over the implementation-life of the LRMP, prevent or reduce the atmospheric deposition of nitrogen and sulfur on TRFO lands and allow no more than a 10% change from the established baseline for lakes with an acid neutralizing capacity (ANC) $\geq$ 25 microequivalents per liter (μeq/L) and no more than 1 μeq/L decrease in ANC for lakes with an ANC<25 μeq/L.	TRFO	Meet air quality standards, reduce atmospheric deposition of pollutants, reduce particulate pollution (dust)	CDPHE, EPA, USFS, National Park Service, oil and gas companies/ operators

Table 4.2.9: Access and Travel Management

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory Linear Recreation Resources (BY), Trail Annual Maintenance (ID), Trail Deferred Maintenance (IE), Monitor Linear Recreation Objectives (MV), Road Condition Assessment (GU), Trail Condition Assessment (GY), Bridge Condition Assessment (GX)	Annual	**2.13.1** The transportation system for TRFO lands within the planning area consists of roads, high-clearance and primitive roads, trails, and bridges that are fiscally sustainable and safe as appropriate for the designated use or desired user experience. The system allows for the use of and enjoyment by the public and meets resource management objectives. Sufficient condition surveys and inspections are conducted to promote road safety and prioritize road maintenance expenditures. **2.13.2** The TRFO transportation system provides reasonable and legal access for resource management and recreation and is dynamic and adaptable to resource and user needs. **2.13.5** The road and trail system in the planning area has adequate destination signage, mapping, and route markers to assist transportation system users in navigating throughout the TRFO. **2.13.11** Motorized and non-motorized users, as well as local, state, tribal, and other federal agencies, are actively engaged in travel management planning, route designation and implementation, and route monitoring for TRFO lands.	**2.13.18** Develop maintenance, monitoring, signing, and implementation plans for TRFO routes during the comprehensive travel management planning process, utilizing guidance provided in BLM H-8342, Travel and Transportation Handbook (2012). Designated routes will be assigned maintenance intensities at that time. Objectives by maintenance intensity level are described in Appendix A of BLM Roads Manual 9113 (2011). **2.13.26** Maintenance intensities derived from the Roads and Trails Terminology Report (2006) should be used to guide maintenance activities on TRFO lands.	TRFO planning area	Maintain a safe, fiscally sustainable transportation system	BLM road and trail inventory database, BLM staff report, partners inventory and report

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Travel management plans completed (DA), Provide outreach through interpretation and environmental education (AL), Decommission and rehabilitate roads and trails (JX)	10 years	**2.13.7** Motorized use on TRFO lands occurs only on designated roads and trails and in small designated open areas (except as exempted by 36 CFR 212.51 and 43 CFR 8340). No new unauthorized or user-created routes are developed on TRFO lands. Any addition of new designated routes to the transportation system will be analyzed using the appropriate planning process and level of environmental analysis. **2.13.8** Roads and trails identified for closure within the TRFO are decommissioned and reestablished with native vegetation cover. **2.13.10** Travel management plans are complete for all TRFO lands within 5 years of adopting this LRMP. Travel management planning remains a continuous process designed to improve the transportation system on TRFO lands. **2.13.12** Transportation system components on TRFO lands are designed, constructed, and maintained to avoid encroaching onto streams and/or riparian areas and wetland ecosystems in ways that impact channel fluctuation or channel geometry (the relationships between channel discharge and channel cross-sectional factors, such as area, width, and depth). Sediment delivery from the transportation system does not measurably impact pool frequency, pool habitat, and/or spawning habitats.	**2.13.19** Develop travel management plans for TRFO lands in accordance with the designation criteria in 43 CFR 8342.1. Routes not included in the designated motorized transportation system will be evaluated for their resource impact potential. Those with high potential for resource impacts will be prioritized for decommissioning as part of the implementation plan for each travel management plan decision. Each implementation plan will identify those routes prioritized for decommissioning, the method(s) that may be used, and a schedule for completion.	TRFO planning area	The transportation system is managed to minimize impacts to resources by limiting motorized travel (excluding oversnow travel) to designated routes and decommissioning undesignated roads and trails	BLM road and trail inventory database, TRFO visitor map

Table 4.2.10: Heritage and Cultural Resources

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Historic Structures Protected, Stabilized, or Restored (KO)	5–10 years	**2.16.1** Significant heritage and cultural resources, such as sites on the NRHP, are maintained in good to excellent physical condition. Significant cultural values are protected or preserved. Sites are preserved and stabilized, may have site-specific management plans, and may be available for interpretation and research. Sites are protected from physical damage and excessive wear and tear resulting from visitor use. **2.16.8** Select historic cabins are restored and adaptively reused for appropriate recreation and/or for interpretive use. **3.24.5** In the Silverton area, high-priority historic resources are stabilized and preserved for future generations.	**2.16.13** Over the implementation life of the LRMP, protect/preserve/stabilize at least seven significant heritage/cultural resources with identified deferred maintenance needs that, if not addressed, would result in loss of the resource.	Specific sites-throughout TRFO and the Alpine Loop/ Silverton Area	Sites protected, stabilized, or restored	State Historic Preservation Office, Tribes, volunteers, schools, State Historical Fund, grants
Heritage Resources Education and Outreach (AE)	Annual	**2.16.6** Management presence at key heritage and cultural resource sites is provided to protect sensitive or heavily visited sites from inappropriate use or vandalism. **2.16.10** Looting of sites is reduced through increased public awareness and education related to cultural resources. Vandalism at sites is promptly remedied to prevent recurrence.	**2.16.14** Annually, post protective signage and/or surveillance cameras on at least one heritage and cultural resource site at risk for vandalism.	Specific sites	Educational outreach programs; protective signs/fencing	BLM, San Juan Mountains Association

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Heritage Resources Education and Outreach (AE)	10–15 years	**2.16.7** Interpretive displays, visitor contacts, and/or brochures are available in order to help visitors and employees understand and appreciate the heritage and cultural resources associated with the planning area. A wide range of heritage activities, experiences, and products (both on- and off-site) are available for visitor enjoyment and education. Off-site activities include museum displays, brochures, audio programs, classroom presentations, and field trips. Public access and interpretive efforts are compatible with the physical, cultural, and recreational settings and values of the resources. **3.24.1** Interpretation of the historic landscapes and features of the Silverton SRMA is made available through a range of effective and appropriate venues. Information is designed to enhance the touring experience and encourage the greatest extent of appreciation and protection of these precious assets.	**2.16.18** Over the life of the LRMP, develop at least one interpretive product in partnership with the Old Spanish Trail Association that interprets the Old Spanish National Historic Trail within the planning area.	Specific sites throughout TRFO and the Alpine Loop and Old Spanish Trail Silverton Area	Educational outreach programs; Interpretation developed	TRFO, Old Spanish Trail Association, grants; San Juan County Historical Society
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) Medium Priority	10–15 years	**2.16.9** Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.	**2.16.17** Over the life of the LRMP, partner with the Old Spanish Trail Association to ground-truth the location of at least two segments of the Old Spanish National Historic Trail.	Specific sites-Old Spanish Trail	Sites documented	TRFO, Old Spanish Trail Association, grants
Heritage Resources Education and Outreach (AE)	3–5 years	**3.14.1** The Anasazi Culture Area ACEC offers appropriate recreation and interpretive opportunities while archeological resources are preserved. **3.14.5** The relevance and importance values of this ACEC, as described in Appendix U, are maintained. **3.14.7** Recreational activities are actively managed in the designated areas, while protecting and mitigating impacts to cultural resources.	**3.14.10** Within 5 years, develop procedures to encourage, foster, and conduct high-quality scientific and scholarly research.	The Anasazi Culture Area ACEC	Educational outreach programs; Interpretation developed	TRFO, San Juan Mountains Association

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Heritage Resources Stabilized, Managed and Protected (HF) Heritage Resources Monitored (MY) High Priority	Monitor annually, 5 years to avoid sites	**3.14.2** The existing character of the cultural and physical landscape is preserved. **3.14.4** Vegetation is managed to protect and enhance cultural resources.	**3.14.8** Over the life of the LRMP, implement site steward and "adopt-a-site" programs. **3.14.9** Within 7 years, reroute or eliminate unauthorized and designated trails to avoid impacts to archeological sites.	The Anasazi Culture Area ACEC	Sites protected and sites monitored	TRFO, San Juan Mountains Association, Southwest Conservation Corps
Heritage Resources Monitored (MY) High Priority	5 years	**3.15.5** The existing character of the cultural and physical landscape is preserved.	**3.15.9** Over the life of the LRMP, conduct phased cultural resources inventory of the area.	Mesa Verde Escarpment	Sites monitored	TRFO, colleges, universities
Acres of Heritage Resource Inventories (BC) High Priority	10 years	**3.15.2** User-made trails and other routes are rerouted or eliminated in order to avoid impacts to archeological sites.	**3.15.10** Over the next 3 years, develop procedures to encourage, foster, and conduct high-quality scientific and scholarly research.	Mesa Verde Escarpment	Acres inventoried	TRFO, colleges, universities, Crow Canyon Archaeological Center, State Historic Preservation Office, grants
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) High Priority	10 years	**3.15.5** The existing character of the cultural and physical landscape is preserved. **3.15.6** Traditional cultural heritage values associated with cultural resources and landscapes within the ACEC are considered and protected. **3.15.7** Designated routes are limited to maintain the integrity of cultural resource values and for scientific research access. **3.15.8** Opportunities are sought to acquire adjacent lands and/or easements to improve access and protection of cultural resources.	**3.15.3** Hazardous fuels are managed in order to protect and preserve archaeological resources, and to reduce the risk of wildfire to adjacent private lands.	Mesa Verde Escarpment	Sites documented	TRFO

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Acres of Heritage Resource Inventories (BC), Heritage Resources Intensively Recorded, Evaluated and Studied (FD), Heritage Resources Education and Outreach (AE) Medium Priority	10–15 years	**3.11.6** Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.	**2.16.19** Over the life of the LRMP, inventory high potential historic sites and trail routes along the Old Spanish Trail, develop a national trail management corridor, and establish goals and objectives for national trails in accordance with BLM Manuals 6250 (2012) and 6280 (2012).	Specific sites-Old Spanish Trail	Educational outreach programs; Interpretation developed; Acres inventoried; Sites documented	TRFO, Old Spanish Trail Association, grants

Table 4.2.11: Paleontology

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Acres of Heritage Resource Inventories (BC)	Annually	Ensure that paleontological resources are considered during the planning process using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	**2.17.10** Where feasible, conduct fossil resource inventories in areas where they are needed on a project basis over the life of the plan.	Planning area	Acres inventoried	TRFO, colleges, universities
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) Medium Priority	10–15 years	**2.17.1** Acquiring better knowledge of paleontological resources on TRFO lands is emphasized.	**2.17.5** Over the life of the LRMP, identify and document up to five paleontological sites on TRFO lands.	Site-specific	Sites documented	TRFO, colleges, universities
Heritage Resources Monitored (MY) Medium Priority	Annual	**2.17.3** Known dinosaur localities are actively managed for the relevance and importance of Jurassic fossils.	**2.17.6** At a minimum, monitor two paleontological localities per year.	Site-specific and Horse Range Mesa	Sites monitored	TRFO, colleges, universities

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Heritage Resources Education and Outreach (AE)	10–15 years	**2.17.2** Paleontological resources are available for appropriate scientific, educational, and recreational uses by present and future generations.	**2.17.8** Increase opportunities for outdoor recreational experiences and volunteer projects focused on fossil resource management, and increase the number of partnerships with educational and research institutions.	Planning area	Public outreach	TRFO, colleges, universities

Table 4.2.12: Minerals and Energy

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inspect and Verify Production at Mineral Material Sites (NF)	Monthly to Annual – size dependent	**2.19.2** Mineral materials (including gravel and decorative stone) are available to support resource management needs, personal and hobby use, and commercial pursuits. Aggregate materials in the Ewing Mesa and Grandview area will continue to be developed as needed. **2.19.4** Reclamation of mineral exploration, development, and production activities is stable, long term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	**2.19.8** Process requests for mineral materials in a timely manner consistent with LRMP direction and applicable laws. Identify areas suitable for, and establish common use area(s) and/or community pits to provide sources of mineral materials to the public.	Site	Production	
Inspect Locatable Mineral Sites for Surface Mgt (NI)	Monthly to Annual	**2.19.5** Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	None	Site	Sites	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Conduct Fluid Mineral Inspections, Including Production and Environmental	As required	Potential social and resource impacts from the development of the Paradox Basin play area are minimized by phasing oil and gas leasing to achieve orderly economic development of portions of the play zones at any given time. **2.19.5** All oil and gas well fields starting at the field development stage and all other established well fields where practicable maximize the collocation of facilities to minimize construction footprints and reduce tailpipe emissions.		Sites	Sites/wells ancillary facilities	

Table 4.2.13: Abandoned Mine Lands

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Integrity and Effectiveness of Installed AML Facilities (JK,HP)	Annual	**2.21.3** Mine waste repositories are protected and physical safety closures are protected or replaced during any BLM-authorized action.		Project	Sites	Colorado Division of Reclamation Mining and Safety, TRFO
Stream Water Quality in AML Impacted Watersheds (JK)	Annual	**2.21.1** Abandoned mine reclamation within the planning area does not negatively impact water quality or historic resource protection.	**2.21.6** The AML program coordinates with affected parties, partners, and stakeholder groups on AML projects.	Watershed	Samples	EPA, Animas River Stakeholders Group and other watershed groups, Riverwatch

CHAPTER 5 – LITERATURE CITED

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